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CLINICAL LECTURE.

ONE OF THE SEQUENCES OF LAPAROTOMY —RETROVERSION OF THE UTERUS— THE USE OF PESSARIES.

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Gentlemen:—The patient I present to you now, illustrates a condition following laparotomy, which is of a peculiarly trying nature to both the physician and the patient. This woman has a very interesting clinical feature in her history, and as she presents a condition you may be often called upon to treat in gynæcological practice, I shall give it to you in detail.

To begin with, this patient's original trouble commenced with a constant and persistent pain throughout the pelvic organs, of a most exaggerated character, which was accompanied by a very severe dysmenorrhœa. She had, in addition to this, pains in the back, headache, and all the symptoms such patients usually have, but in a most aggravated form. When she first came to this clinic for treatment, I found that on digital examination the dysmenorrhœa in her case was due to a diseased condition of the tubes and ovaries. There existed what is known as an apoplectic condition of the ovaries, with total occlusion of both tubes. I sent her to the Hospital and there performed abdominal section, under the strictest antiseptic precautions, removing both tubes and ovaries, with the result of a marked and decided improvement in every respect in her general condition. She was on the eve of being discharged from the Hospital, perfectly cured, when I accidentally discovered a small fistulous opening in the line of the abdominal incision. On passing down a probe carefully through this opening, I found that the instrument was deflected to the left in the direction of the former seat of the left ovary, and extending to a depth of six or seven inches in all. I immediately suspected the cause of the trouble to be an attempt on the part of nature to throw off the ligature that had been placed around the pedicle of the ovary that had been removed from that side, and, on passing a long forceps through this fistulous opening I very readily grasped something with its blade which I knew by the sense of touch to be the suspected ligature. This I then brought away with the forceps. It was exactly in the same condition as it was when first introduced. The fistulous opening on that side healed up immediately.

The fistulous opening on this side of the abdomen had no sooner healed up than another one developed on the right side, due to the same cause, but which was not so easily removed as in the former instance. Through this opening I passed a small-sized curette down to the bottom of the sac to the depth of about eight inches. I could readily make out by touch the existence of a foreign body, occupying the same relationship to the stump of the right ovary as was the case with the left one. Withdrawing the curette, I then thrust the forceps down the fistulous tract and I could readily grasp the ligature with it. I made traction on the ligature with the forceps, but this threw the patient into a paroxysm of such acute suffering that I was compelled to desist from any further attempt in that direction, and postpone the operation for another day. Finally, after three weeks of futile attempts at this kind of work, with the patient tired and myself discouraged, I thought I would make another attempt, in a somewhat different manner, to remove the offending ligature. I accordingly put the ligature on the stretch, and with a small probe for a guide, locating the end of the ligature, I cut the ligature completely away with a blunt-pointed bistoury. The fistulous opening soon afterwards healed promptly and the patient experienced no further trouble in that direction.

I mention this incident to you to-day in connection with the case of this woman be-

cause it is not an uncommon occurrence following a laparotomy, and is one with which you should become familiar. The ligature would never have spontaneously come away in this case, and there would be as a result a very disagreeable, running fistula.

Now, the next question that naturally suggests itself to our minds in this case is, how are we to get this fistulous opening healed up as rapidly as possible? The opening in the case of this woman was originally eight inches in depth, but it is now only three and a-half, and is gradually filling up with healthy granulation tissue. She complains of considerable weakness, slight flushing of the face, a tired feeling, and other symptoms of a like nature. I have told her that all these symptoms were due to the fact of the removal of both ovaries and tubes, and the same condition is brought about by their removal as if she had undergone a practical change of life. The proud flesh you see collected about the margin of this fistulous tract will have to be removed, and the simplest and readiest way to accomplish that is by means of the curette under cocaine. And when the normal tissue is reached, the tract will then heal up quite readily. It may also be packed with iodoform or bichloride gauze, or what is better still, applications of pure carbolic acid may be made to the entire fistulous tract, and the parts then dressed with bichloride gauze, as I have done in this case.

I wish to say a word, in this connection, about the form of ligature that should be used in these cases. The ligature I generally employ, is silk, as I consider it the strongest possible form of ligature that can be used for this purpose, and is, at the same time, the most reliable. You can be certain it will not give away, or be absorbed like catgut. The only trouble I ever experienced in my life, was in the use of catgut in a patient with a lacerated cervix and perineum. I employed catgut for suturing the cervix, putting in four stitches, and to my great surprise, on the third day after operation, I was called to the patient's bedside and found her with a profuse and exhaustive hæmorrhage from the circular artery; the four catgut sutures having come away, leaving the wound in the cervix gaping widely. Since that time I have never employed catgut in these operations, as catgut is always apt to come away, but silk never.

RETROVERSION OF THE UTERUS.

The next patient comes to us complaining of a train of pathological symptoms that one very frequently hears at clinics of this kind. She has a constant and distressing backache, persistent headache, and dragging down pains across the small of the back, which have existed for a considerable length of time. She also complains of a very obstinate form of constipation.

As I examine this woman's uterus, I can readily understand the reason for the continuance of these disagreeable symptoms. She has a uterus that is somewhat retroverted, and in making an examination for this condition, I always first ascertain the degree of mobility of that organ, whether it be freely movable, laterally as well as antero-posteriorly, and whether it can be lifted out of its position and restored to its normal relationship in the pelvic cavity. When we have found out these different conditions, we will then be able to determine what we can do for the patient.

To ascertain whether a uterus can be elevated, it is not always necessary to employ a uterine elevator for that purpose, but with a cervix so short as this is, I do not think we can get sufficient leverage manually on the anterior lip, without the use of an elevator. A good many gynæcologists do not believe in the use of an elevator for this purpose, and there are also some who argue that retroversion is not a disease *per se*, but a symptom. I do not, myself, consider displacement of the uterus a disease, but it gives rise to certain reflex symptoms, which can be removed by restoration of the uterine organ to its normal position in the pelvic cavity. I have seen so many of these patients benefited by this simple manœuvre, that I always have recourse to it when such a condition is possible. If there be adhesions formed around the uterus, you can very readily determine to what extent they are present when you pass your finger into the rectum of the patient. Under such circumstances, it may be necessary to break up these adhesions under ether, and without subjecting the patient to the risk of a laparotomy. This can be readily and easily done by means of the uterine elevator, with the patient at home in bed. After the operation is completed, she should be kept in bed for from three to six days afterwards. During that time I always make it a practice to watch her carefully, and if she complains of any pain or tenderness about the pelvic region, I treat her for these symptoms by hot douches, warm anodyne applications, and other measures appropriated for such cases. If you are careful in your operations about the uterus, you will never experience

any trouble as a result thereof.

After breaking up the adhesions in this way, I elevate the uterus a few times, to educate it, so to speak, towards assuming its normal position in the pelvic cavity. Finally, after repeated efforts in this direction, when the uterus can be readily raised without giving the slightest pain or discomfort to the patient, I then proceed to use cotton tampons or a pessary, or whatever I may deem best adapted to the case in hand.

Speaking of pessaries in this connection reminds me of the fact that twenty years ago, when I began to first practice the art of gynæcology, every one was speaking of pessaries, while to-day, among gynæcologists, we very seldom hear a pessary referred to. I do not think the time will ever come when this instrument can be safely relegated to the back shelf in gynæcological practice. If there is one subject, more than any other, that has been abused, that subject certainly is the use of the pessary. The pessary has undoubtedly, caused a good deal of harm in many instances, but I contend that this harm has been due to the flagrant abuse of this instrument, and not its use. We have many patients who come to us like this patient before us, suffering from a chronic condition of retroversion, who have been very materially benefited by the reposition of the uterus and its maintenance in its normal anatomical position in the pelvis by means of a well-fitting pessary. A pessary, no matter of what kind it be, whether it be a tampon of cotton, or one of tin or rubber, certainly does give great relief to the patient in a large majority of cases. In the fitting of a pessary there is at times as much mechanical ingenuity required of the physician as in the making of any mechanical appliance. The instrument must fit "just so," to be worn with any degree of comfort. It must neither press back in front nor at the sides. In fact as much care should be taken in the fitting of the instrument as a dentist would take in the fitting of a plate in the mouth. If the patient complains of undue pressure or pain caused by the instrument at any point, it should be removed at once, and the patient herself should be instructed how to remove it in case it gives her the least discomfort

In fitting a pessary for displacement the method I always employ is to first map out in my mind the exact shape of the vagina, its length, its breadth and its general outline. I then take one of these Sims' block tin rings, which, as you see, is perfectly malleable and can be bent into any desired shape. I recommend these rings to you because of their ready adaptability to any case and because you can make almost any one's pessary out of them; they are to be furthermore recommended, because if the pessary is an instrument you need only occasionally, you will find these rings very much cheaper than a rubber pessary, and a dozen of them will answer the purpose of five or six dozen of the others. They are, therefore, very much more economical for an ordinary practitioner or a country doctor to carry for gynæcological practice. I take this medium sized block tin pessary and mould it in my hand until I think that this curve I have given it posteriorly will suit the required purpose. The width I give it by gently pressing in the hand and the slight curve downward which I give it anteriorly, is done for the purpose of preventing a too firm pressure against the pessary.

I will now proceed to place this pessary in position, and this is best done with the patient lying on her back. By making firm pressure downwards with one index finger on the perineum, you see that the instrument is readily slipped into position by the uterine elevator. The next step is to let your patient get up and walk around the room, in other words, to test the instrument fully before allowing her to leave your office. If she complains of pain at any point, remove the instrument at once and find out the exact point of pressure and where the fault lies with the instrument. Having made the necessary alterations in the instrument, replace it then and you will find it will be perfectly comfortable. Never permit a patient with a newly adjusted instrument to go away and remain for several days from under your observation. Always instruct her to return the very next day so that you can be sure the instrument is doing no harm, or else, if she lives at too great a distance to return the following day, then instruct her how she is to remove it herself in case it causes her the slightest inconvenience or the least pain.

Now, this block tin pessary is not to be applied in this case as a permanent instrument by any means. Being made of block tin, it is apt to corrode and to cause at the end of a few weeks sore spots on the mucous membrane of the vagina. Consequently, I only use it as a temporary instrument to get the proper shape of what will subsequently be a permanent one. When the block tin instrument fits satisfactorily, as you think it ought to do, you can then remove it, send it by mail to the nearest instrument maker and

have him make you a hard rubber one, of exactly similar kind, or, if you have any mechanical ingenuity about you, you can take the hard rubber one and with the aid of a spirit lamp and a little vaseline or sweet oil, mold one into the required shape.

Having now adjusted this pessary in the patient before us, you see that it holds the uterus up perfectly, the patient complains of no pain whatever, her backache has gone, and I have no doubt but that after wearing the instrument a few weeks, her general health will be in every way very much improved. She will be able to go about her work and attend to her duties as she has not been able to do for some years past.

The next patient I present to you illustrates, very strikingly, the points I have just given you in regard to the management of adhesions around the uterus. This patient came here some months ago with the uterus bound down on all sides by firm bands of adhesions, which I have broken up under ether, in the way I have just pointed out to you, until the uterus was rendered freely movable, and after two or three weeks of local treatment it has been kept in its normal position in the pelvic cavity by means of a Thomas Smith pessary. She came here with exactly the same symptoms and condition as the patient I have just spoken to you about, and she is now entirely free from all the symptoms that accompany retroversions. She wears the pessary without the slightest inconvenience, and is hardly aware of the fact that she is wearing one at all. A pessary is worn with advantage only in one way, and that is when it gives rise to no pain whatever from its use.

Bear in mind the fact that there is no one pessary that will fit any two patients, and each instrument must be molded to suit each individual case. Mold your instrument to fit your patient and do not try to mold your patient to fit the instrument. When you have fulfilled these anatomical indications you will then know how to fit an instrument correctly so that your patient will be able to wear it with a great deal of practical comfort and satisfaction.

SYNTHETICAL QUININE.—MM. GRIMAUX and Armaud have succeeded in producing a quinine by synthesis which is said to be in every respect identical with the quinine of vegetable origin. They arrived at this result by treating a base obtained from the *Remijia Pedunculata* (cuprein) with sodium, and heating the compound thus obtained with chloride of methyl.

CHRONIC GASTRITIS—GASTRIC ULCER—ATROPHY OF THE GASTRIC MUCOUS MEMBRANE.[1]

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Gentlemen.—The first case that I shall show you is interesting and practically very useful to study. The man is one of those individuals from whom it is difficult to obtain an entirely satisfactory account of himself. He came here a week ago, with a history somewhat as follows: He is 39 years of age, married, and an iron-worker by occupation. He has had the ordinary diseases of childhood, except whooping cough, and suffered from measles only a few years ago. With these exceptions he has been practically well until within a year and a half. Then, for causes unknown to himself, he began to feel weak and out of health, and afterwards to lose flesh. He also began to experience pain in the epigastrium and a sensation of distress on eating, but he did not have much vomiting until last Autumn. During the summer he imbibed stimulants in rather large quantities, but it does not appear clear whether this habit was the result of fondness for drink or of an effort to overcome the weakness. In November he commenced to vomit nearly every day, and often several times a day. For the past three weeks he has not been troubled so much in this way, although he still vomits frequently. The pain which he suffers comes on at no regular period as related to the time of the ingestion of food, although it appears to be food which produces pain. Neither does the vomiting occur at any difinite time. There has been no history of ejection of large quantities of food, or of blood; nor has there been in the vomited material any particularly dark substance, further than could be explained by the character of the food taken. The bowels have recently been constipated, though formerly they were regular. He does not know what articles of diet disagree with him most. After a general mixed meal he is apt to suffer pain and distress. At times he can restrain the vomiting for hours, but eventually he is forced to yield to the inclination.

This, gentlemen, is the history in brief.

[1] A Clinical lecture delivered at the Hospital of the University of Pennsylvania.

It is not very perfect, but it is the best we can get out of him. It is not typical of anything, but it is interesting in connection with the case which was before you last week.

You probably remember that anæmic girl who suffered intense epigastric pain, coming on soon after eating, and shooting through to the back; while vomiting occurred very soon after the ingestion of food. Ulcer of the stomach was naturally suspected, for this is apt to occur in females of about her age.

It is quite certain that patients often have no marked gastric symptoms and yet may have an open ulcer in the stomach. Again, it has been found that certain patients, after suffering from the symptoms of ulcer, appear to recover entirely, and go on for an indefinite number of years without further gastric symptoms, and then relapse. Or they may evidently die of some other disease, and at the autopsy an ulcer may be found in the stomach entirely unhealed. It has probably been open, but inactive all these years.

We therefore may have an ulcer without any characteristic symptoms, and again an ulcer present with severe symptoms; the symptoms later disappearing, although the ulcer has not healed.

The girl of whom I have been speaking says that for a long time she has not passed more than two or three days without vomiting. For the past week she has been at absolute rest in bed, and has been on an exclusive diet of peptonized milk in small quantities. She has not vomited since she entered the hospital. She feels better and her health is improving. This shows what rest and proper food, in proper quantity will sometimes accomplish.

A very important matter to be borne in mind in her case, was the condition of her blood. We found on examination that there were 2,900,000 red blood cells to the cubic millimetre. That is, taking 4,500,000 as the normal number for females, she had 64 per cent. of erythrocytes. The amount of hæmoglobin, however, only equalled 20 per cent. There is therefore a marked contrast between the percentages of hæmoglobin and of red blood cells. The girl really has chlorosis or chloro-anæmia, and it is conceivable that the pain in her case is simply of the nature of a cardialgia, a common symptom in chlorosis, and that there is no ulcer. It is equally possible however, and much more probable in the light of the very marked gastric symptoms, that an ulcer does exist which is the indirect result of chlorosis; since it is a very well-known fact that this disease acts as a powerfully predisposing cause of ulcer of the stomach. The presence of chlorosis modifies the treatment to some extent. It has been found that in order to effect the healing of a gastric ulcer, it is often first necessary to remove the chlorosis or anæmia. Consequently in addition to the rest and careful diet of which I spoke, the girl has been taking iron. Now nearly all of the preparations of iron are irritating to a stomach in this condition, and it is most important to choose one which is entirely free from this disadvantage. Within a few years a number of preparations of iron have been devised for which this property is claimed. The one which I have employed in this case is the Liquor Ferri Albuminati, the solution of the albuminate of iron, made by Drees, of Bentheim, Germany. It is of neutral reaction, entirely free from metallic taste, does not coagulate albumen, and is usually perfectly well borne by the stomach. Even in cases in which hæmatemesis has recently occurred, the use of this preparation is not contra-indicated. The girl of whom I have been speaking, takes it readily. It may be given in doses of 10 drops, three times a day at first, but a much larger amount can later be administered.

To return to the case of the man still before us. You observe that he is considerably emaciated, rather pale, yet with no decided cachexia. He is quite weak and is able to walk but a short distance. His other symptoms I have already reviewed.

There are several diseases to be taken into consideration in the diagnosis of his case. One is gastric ulcer; a second is chronic gastric catarrh, or chronic gastritis which is practically synonymous; a third is carcinoma ventriculi, and a fourth is simple dilatation of the stomach. Gastric ulcer can be readily excluded by comparing this man's symptoms with those of the girl. The pain does not come on so soon after eating, it is not as intense and is not as localized as in ulcer. The vomiting, too, is not so prompt, and there is, indeed, very little connection in this case between the time of eating and that of vomiting. There is another very important matter,—the chemical characteristics of the gastric contents—to which I shall allude in a few moments.

Simple dilatation of the stomach, *i. e.*, a dilatation not due to carcinomatous constriction of the pylorus, may produce a degree of anæmia and emaciation which is surprising.

I do not know that I have often seen cases more emaciated than sometimes after simple gastrectasia, where the stomach seems for various reasons to have lost the power of emptying itself of food and has dilated to a remarkable degree. This condition can be recognized in various ways. One plan, proposed by Ewald, rests on the use of salol, of which 5 or 10 grains may be given at one time. Salol is supposed not to undergo decomposition into salicylic acid and carbolic acid until it reaches the intestinal juices. By having your patient pass his urine every fifteen minutes and testing this with chloride of iron, you may, by observing the brown coloration, determine how soon salicylic acid appears in it. Where the stomach is inactive the salol may remain in it for hours or days. If, after the administration of salol, you can in the course of half an hour detect salicylic acid in the urine, you feel assured that there is no motor insufficiency. It is however necessary to say that the value of the salol reaction is much disputed by various observers, and is still problematical. The test may be a help in forming a diagnosis, but cannot be relied on as conclusive. We have not yet had an opportunity of trying it in this patient.

Another method of determining the presence of dilatation is by percussion. It is, however, often very hard to be positive as to the different percussion boundaries of gastric resonance. The liver covers the lower portion of the right boundary, and the left border, also, cannot be located with certainty. The upper border is partially covered by lung. After all, these boundaries usually vary but little in any case. It is the determination of the lower boundary which is the important matter. It is this which you wish to find in gastrectasia, and having found it, the others can be disregarded. You will find in practice that it is frequently, perhaps usually, not easy to distinguish the tympany of the stomach from that of the colon and small intestines. The ability to do this in any case depends a great deal upon the respective amount of gaseous dilatation of the various viscera. By simple percussion it is often impossible to fix the lower limit of the stomach. Where there is great dilatation you may find a loud, deep-toned tympany in the gastric region, and you may get the succussion splash on tapping with the tips of your fingers. Some writers, indeed, claim that the production of the succussion splash, and the noticing the regions in which this ceases, is the best method of outlining the stomach under all conditions. I think, however, that you will find it much more difficult than the description would indicate. The lower boundary of the stomach could of course, be located by passing a sound and feeling for it through the abdominal walls, in the way proposed by Leube; but this method is by no means without danger, and is unpleasant to the patient. Another plan is that of Penzoldt, namely, the passage of a tube, the pouring in of water through this, and the determination by percussion of the position of the dullness produced. This method is reliable, but unpleasant, and not free from danger, should an ulcer exist. A third method is that of Frerichs. This consists in allowing the patient to drink, say, 20 grains of bicarbonate of soda, dissolved in a glass of water, and to follow this by another glassful, containing about three quarters as much tartaric acid in solution, with a little sugar to take away some of the sour taste. Chemical decomposition at once begins, carbonic di-oxide is set free, the stomach dilated by it, and the limits of the viscus often very distinctly defined both to inspection and to percussion. The method is, nevertheless, not entirely accurate and sometimes disappoints utterly; since for its success, is required a decided ability on the part of the pylorus to restrain the gas from passing rapidly into the intestine. One must also be prepared to withdraw the gas promptly with the stomach-tube, in case unpleasant symptoms arise. Perhaps the simplest plan, and the one to be first employed, is that of Piorry, of which Penzoldt's method is a modification. This consists in causing the patient to drink several glasses of water and then in determining the lower border of the percussion dullness while he is in the erect position. This, of course, indicates the lower boundary of the stomach. On again reclining, this line of dullness shifts.

The lower border of the stomach varies considerably in its position, since, as we know, the stomach itself is a movable organ. It is however, the very generally accepted opinion that the lower boundary of the healthy stomach rarely reaches to the transverse umbilical line, and that, when it extends much below this line, the viscus is certainly dilated. In the present case, however, it is easy to determine that the stomach is not dilated, and I will not take the time to go through the examination with you.

The two diseases remaining for us to consider, are chronic gastric catarrh and cancer.

I have said nothing about dilatation from cancerous constriction of the pylorus, for there

is no dilatation in this patient. We have still to entertain the possibility of the presence of a carcinoma of some other portion of the stomach, interfering with health by disturbing the digestion, causing pain and giving rise to cachexia. It is very difficult in this case to determine whether the patient is suffering from gastrititis or from cancer. There is one sign whose presence would put the diagnosis beyond doubt. If we were certain that we could find some increased resistance, some nodular growth in the epigastrium, we should be justified in concluding that we had to do with carcinoma. If we found it in the region of the pylorus we could not certainly tell that it was located in the stomach, for it might be in the left border of the liver. Growths in the liver are, however, almost invariably of secondary nature, so that if you find severe gastric symptoms accompanying a growth which appears to be in the liver it is probable that you also have to do with a primary tumor in the stomach, whether you can detect it or not. In a case in which you were in doubt whether the tumor felt was in the liver or the pylorus your diagnosis would be aided by observing the effect of respiration. The liver moves a great deal with respiration. Hence, if such a patient breathe deeply and the tumor simultaneously move downward some distance you would be inclined to believe that it was in the liver. If, however, you can move it about pretty freely in the abdominal cavity, and it move but little with respiration, you would conclude that it was not in the liver.

To illustrate the difficulties often attending the recognition of a gastric cancer by palpation, I may tell you of a case in this hospital some years ago. The man was examined by several expert observers. All agreed that in the epigastrium, and extending into the left hypochondrium, there was a distinct mass, undoubtedly a carcinoma ventriculi. I examined him also and had no doubt of the correctness of this diagnosis. The patient suffered from progressive emaciation and cachexia and from marked gastric symptoms. After some months of repeated observation he died. At the autopsy a small growth was found in the *colon*, and the rest of the tumor was composed of fecal accumulation merely. I well recall the first—I fear not the last—time I failed to recognize such a mass. It was the case of a man admitted to the hospital in which I was then an interne. On examining him I found what I supposed to be a large growth extending over the left side of the abdomen. On the suggestion of a fellow-interne I administered a large dose of salts and the growth promptly disappeared. Since then I have always hesitated to diagnosticate any growth in the abdomen unless I was sure that the bowels had been opened regularly, and even unless I felt pretty confident that no hardened fecal accumulation existed around which softened feces could pass.

In the case before us there is no evidence of a tumor at the pylorus. I am not quite sure that there is not a sensation of increased resistance elsewhere in the gastric region, but I think it very probable that this sensation is purely subjective. It is so easy to feel something when you are looking for it.

You will find the greatest difficulty in your practice in palpating the abdomen. It takes, I think, much more experience than does the physical examination of the chest. One of the chief difficulties consists in overcoming the resistance of the abdominal muscles. Sometimes you find the abdominal walls lax, and then palpation becomes an easy matter, when, however, the patient is very fat, or the muscles very resisting you are often practically at sea and can determine nothing. If the case be one in which a decision is absolutely necessary you might give ether. This would help greatly, but it is, of course, not feasible in every case. In ordinary practice you direct the patient to draw up his legs in bed, and you may even prop him up slightly in order to still more relax the abdominal parieties. Then have him breathe deeply—sigh—through his mouth. In this way, and by gentle and skillful palpation—and only long practice after all can teach you this—you will usually succeed in determining the conditions present. Sometimes, however, it will be only after several examinations that you finally satisfy yourself.

This man has no positive evidence of cancer. There is no increased resistance determinable with any certainty, he has no marked cachexia, and he has been working very hard though sick, which accounts for much of his weakness. He could scarcely have had a cancer for the past year and a half and be in as good condition as he exhibits at present. Since he has been in the Hospital he has had no vomiting. He has been in bed and has been fed on peptonized milk. We have also given him pepsin with hydrochloric acid and wine of condurango. The latter was proposed some years ago as a

specific in cancer. It is, of course, not such, but it is an excellent stomachic, similar to tincture of cardamom.

I think, therefore, that in this patient we must make the diagnosis of chronic gastritis, in the production of which, at any rate in the increasing of which, the excessive use of alcohol has had some influence.

I have as yet merely referred to the chemical examination of the contents of the stomach in gastric diseases. This is now-a-days a most important matter. Many investigators have maintained—and perhaps most prominent among these is Riegel—that in cases of cancer of the stomach free hydrochloric acid cannot be found by certain color tests, some of which I shall presently mention; whereas in gastric ulcer the secretion of hydrochloric acid is always in excess. Further, that most cases of dyspepsia, including many cases of chronic gastritis, do not suffer from a diminution in the amount of acid secreted, but rather from an excess of it. The whole subject is still in what might be called a formative stage. What is stated positively and apparently proved by one investigator, is as positively contradicted or disproved by another. A few points, however, I think, we may depend upon. First, that in gastric ulcer the amount of free acid found is almost always in excess, or at any rate not diminished. Second, that in cases of gastric cancer free hydrochloric acid is always absent, or at any rate present in very small quantities. I do not think, however, that we are at all justified in concluding that the absence of free acid is met with only in cancer. Although many cases of chronic gastritis are characterized by an increase in the amount of acid secreted, in other cases of the same disease, and in some other gastric affections as well, the secretion is certainly diminished or absent.

The absence of acid, then, only increases the probability of the existence of cancer in cases in which the other symptoms point strongly in that direction. I should, however, hesitate to make the diagnosis of cancer if hydrochloric acid were present in normal amount, or of ulcer if the acid were absent.

Most of you are familiar with the way in which we procure the contents of the stomach. The patient is given a mixed meal in the morning, and, if you wish to be very accurate, the stomach should be first washed out. Five to seven hours afterwards syphon out the contents of the stomach with a tube, using as little water as possible. Some clinicians use no water, but simply introduce the tube and, having the patient lean forward, press firmly over the epigastrium, and thus force the contents out. I have never been able to do this with much satisfaction, but have always needed a little water. The contents of the stomach, having been secured, are filtered and examined by various chemical tests. We wish to ascertain several things. Among these are the presence and amount of lactic and butyric acids which indicate the degree of fermentation. Further, the presence of free hydrochloric acid, as this is to some degree an index of the digestive power of the stomach. You need not look for pepsin, as it has been found that where hydrochloric acid is secreted, pepsin is secreted also. You may, however, readily test the peptic strength by placing a small cube of hard-boiled white of egg in a test tube with some of the filtered fluid, and setting this in a warm place for six or eight hours. If the fluid has no peptic strength the egg does not change; otherwise it is, of course, more or less dissolved.

A very important matter which is, I think, unduly overlooked by many writers, is the presence of peptones. It is easily conceivable that a man may have no excess of pepsin and hydrochloric acid but quite sufficient to make abundant peptones of the food taken. You may find in such a case no hydrochloric acid and no peptic strength, but testing with sulphate of copper—the biurette test—may show an abundance of peptones, indicating that acid and pepsin must have been present at some time during digestion. A case of this nature was in this Hospital only a few weeks ago. I examined the contents of his stomach and found no hydrochloric acid or peptic strength, but a decided re-action for peptones. At the same time there was no reason to suppose that the patient had a cancer of the stomach. An interesting case showing the value which sometimes attaches to these newer methods of clinical study was that of a man who was for a time in the Hospital some years ago. He suffered from marked and increasing anæmia, emaciation and gastic symptoms. He was given a very carefully regulated diet, and his vomiting and distress ceased, but he continued to fail in health. The question arose whether or not a carcinoma ventricoli was at the bottom of all his trouble. To some who examined him it seemed that there was increased resistance on palpation of the epigastrium. However, chemical examination of the gastric secretions showed abundant hydrochloric acid and powerful peptic strength. On this ground the idea of carcinoma was abandoned. The case finally developed into one of pul-

monary tuberculosis, and after death there was found a duodenal ulcer, but no cancer.

Now, in the patient before us to-day examination has shown. that the free acid is entirely absent, and that the secretion has no peptic strength. Are we then compelled to altar our diagnosis? I think not. As I have already told you chronic gastritis is sometimes without free hydrochloric acid in the gastric contents. We shall then remain by our previous diagnosis. We will continue his treatment and report his progress on another occasion.

I wish to say a word here in reference to the tests employed for hydrochloric acid. There are a number recommended and the battle over their respective reliability wages as fiercely as that over the indication of free acid when found. The tests perhaps oftenest employed are the methyl-violet, the Congo red, and the Phloroglucin-vanillin or Günzburg reaction. The latter is rather more difficult to apply, and I do not know that it is any more accurate or reliable. The tests generally used in this Hospital are Congo red and methyl-violet. If a solution containing free hydrochloric acid, even if very dilute, be added to a solution of the former the red becomes a blue. With the latter the violet becomes blue under the same conditions. A very convenient method is to immerse strips of filter paper in the solution and allow them to dry. One of these can then be dipped into the solution to be tested.

These tests are so practical and so easy of application that they are worth remembering. Both of them are very delicate. The objection urged against them is that certain other substances, as lactic acid in a concentration not usually found even in a diseased stomach, will produce the same color change. Nevertheless, the failure of the change to take place is an undoubted proof that no free hydrochloric acid is present. What I have said is true only in a restricted sense. It is quite certain that careful chemical tests made by an expert chemist may show the presence of acid where these color tests fail. This I know from personal experience. Acid has been found in the chemical laboratory of the University in cases in which I failed to discover it with the color tests. For clinical purposes, however, I believe these tests to be efficient. The reaction for lactic acid—known as Uffelmann's test—is applied as follows: Dissolve a small amount of chloride of iron in a little water in a test tube, and add a few drops of a strong solution of carbolic acid until a purple color is produced. If, now, to this be added some of the filtered contents the purple color will become a canary yellow if lactic acid be present.

This second case is also one of gastric disorder, and is one of extreme interest. He has been kindly brought here by the physician under whose care he is. Unfortunately we have but little time remaining in which to study it together. The paient is a man of 43 years of age. His father and one sister died of phthisis. He has never drank to excess. Except for chronic constipation he was always well and strong until two and a half years ago, when he found that he was losing appetite. This was soon followed by discomfort after eating, with frequent vomiting occurring an hour or an hour and a half after meals, and an increase in constipation. One and a half years ago he had a great deal of vomiting. He has been somewhat pale ever since he came to this country, 24 years ago, and thinks he has been as pale as at present for the last two years. His best weight has been 145 pounds, and his average weight 136 pounds. His present weight is 119 pounds. Last December he had to give up work on account of increasing weakness. The dyspeptic symptoms at that time became more marked, except the vomiting, which has been less. He has had ringing in the ears, accompanied by a sensation of lightness in the head.

When examined a year ago the skin had a pale, light-yellow tint, with but little subcutaneous fat. There was marked pulsation in the vessels of the neck, a soft and somewhat accelerated pulse, and a blowing murmur at the apex of the heart with a sharp second sound. The hepatic and splenic dullness did not seem to be increased. No tumor could be found in the abdomen, even by the most careful examination. The examination of the blood showed 681,000 red blood cells to the cubic millimetre, with a slight increase of the white cells. Five grains of salol were given and the urine tested after a half hour and after one and a half hours, but no salicylic acid was found. This seemed to indicate a possible motor insufficiency of the stomach. Œdema of the feet and ankles was first noticed last June. The urine, however, does not show any evidence of Bright's disease. He improved somewhat through the summer, and the blood-count made last December showed 2,000,000 erythrocytes, *i. e.*, 40 per cent., with a percentage of hæmoglobin of 50. Thus, as you see, the percentage of hæmoglobin exceeded considerably that of erythrocytes; a condition

characteristic of pernicious anæmia. In January there was great weakness and much nausea and retching with pain. Lavage brought up a quantity of foul-smelling mucus. At no time has hydrochloric acid been found in the gastric contents. His condition has certainly been getting worse, for some time past. I have been able to read you only scattered extracts from the elaborate clinical history which his physician has made.

Turning to the patient you notice at once the excessive pallor, yet without any decided emaciation. The pallor has the peculiar faint lemon tint often attending extreme anæmia. There has been no growth found in the abdomen. Moreover, if this were a case of cancer we should probably have had a fatal issue long before this.

On percussion you notice that the loud gastric tympany is very extensive, and his physician has determined, by giving him water and then examining in the way I have described, that the lower border of the stomach extends below the umbilicus. We undoubtedly have here a dilatation of the stomach without any constriction at the pylorous to account for it. Here is a case in which there has been no hydrochloric acid found, yet in which there is no reason to believe in the existence of cancer.

I have shown you this case because it is a very possible example of a rare condition, or at least of one very little understood. It is probably an example of atrophy of the gastric mucous membrane. I have seen only one instance of this disease, and that post mortem, and there are not many cases reported. In this disease you find a combination to some extent of the symptoms of chronic gastritis with those of pernicious anæmia. According to George Meyer, who has seen several cases and carefully studied the subject, the symptoms are dilatation of the stomach, disappearance of the natural secretion, cardialgia and diminution of the gastric movements, while at the same time there is extreme anæmia with fairly good general condition and an absence of marked emaciation. In these cases the microscope shows that the gastric tubules have almost entirely disappeared. There is practically no mucous membrane. You will find a small-celled infiltration with cysts where the membrane should be, with scanty remains of glands here and there. The other layers of the stomach-wall are not much affected, except that the submucosa is thickened. In certain cases an overgrowth of connective tissue occurs instead of the infiltration and chokes the glands, as it were.

Fenwick, Nothnagel, Osler and Henry, Litton, Ewald, Kinnicutt and a few others have reported cases of this affection, with pretty much the same symptoms. The disease is rare—or rather the reported cases are—and the number of instances of it might almost be counted on the fingers of the two hands. The diagnosis is often impossible, ante-mortem and in the case before us, as in all others, can only be made provisionally. Yet I think, with the symptoms exhibited by this man, we are justified in considering this as very probably a genuine instance of atrophy of the gastric mucous membrane. Review with me once more what may be gathered from the man's history and appearance. The extreme pallor and the lack of marked emaciation are characteristic of pernicious anæmia. The condition of the blood is also characteristic of this disease. Then he has marked dyspeptic symptoms with a failure of the secretion of hydrochloric acid. There is evidence of motor insufficiency of the stomach, and there is gastrectasia. This combination of symptoms exactly fills the requirements necessary to justify the diagnosis.

Atrophy of the gastric tubules may produce dilatation, and conversely dilatation may be followed by atrophy. In the latter case the tension and pressure on the gastric wall induces the atrophy. In the former the food, not being properly digested, lies in the stomach, decomposes with the formation of gases, and produces dilatation. This patient at times does not vomit for several days and then fills a large basin with the contents of his stomach.

The treatment of this case is practically what has been already employed; though, in fact, very little can be done in the way of therapy. Arsenic has been given him in the hope that it might act as an alterative. He has also had gastro-intestinal antiseptics, such as naphthalin, aromatics, salol and the like. Bismuth has been tried, as has nitrate of silver, in an effort to control the vomiting. Some dependence can be placed on the administration of predigested foods, in the hope that in this way the lack of digestive power may be supplemented.

Lavage at frequent intervals is certainly indicated, and has been repeatedly tried in his case. Unfortunately, though it gives decided relief, it exhausts him to such an extent that it cannot be employed.

It is said that people living out-of-door lives are hypermetropic.

COMMUNICATIONS.

TRAUMATISM OF THE CHEST.[1]

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In the course of my investigations on thoracic surgery for The Annual of the Universal Medical Sciences, I have been strongly impressed with the lack of knowledge in regard to the injuries of the chest. While this subject has been considered somewhat carefully in my two contributions to that work, there are many practical details of great importance, which are not touched upon, owing to the paucity of data afforded by the very limited reports in this branch of surgical experience.

It is not my purpose now to enter into the minute distinctions of the lesions resulting from violence to the walls and contained viscera of the chest. I ask for the attention of surgeons to the great advantage of methodic treatment of traumatism of the chest.

All those inflammatory processes of a latent or idiopathic nature, which lead to serious effusions primarily, or to suppuration secondarily, within the thoracic cavity, are excluded, as not germain to our present undertaking. In like manner, the very extensive lesions involved in operations for the relief of the above conditions in all stages, do not come within the scope of this paper.

Foreign bodies entering through the trachea, into the bronchi and causing mechanical obstruction, or inflammatory complications, call for consideration, under the general inflammatory impression transmitted to the pulmonary structure.

Blows upon the parietes of the thorax which propagate a shock to the lungs or heart, involving an impairment of functions, or subsequent organic changes, come appropriately under the heading of traumatism, though no superficial contused wound is apparent.

Of course, all violence from without which produces injury to the structures within the chest, should be regarded as the proximate cause of the lesion, whether it be hæmorrhage, congestion or inflammation.

The grosser accompaniments or consequences of violence, consisting in notable contusion of the soft parts and fracture of the bony walls of the chest, are frequently the exciting causes of transmitted inflammation to the vital structures of the thorax.

Among the gravest injuries to the chest are the wounds by firearms and by cutting or puncturing instruments. These generally bring about the entrance of air into the pleural cavity and thus by pressure upon the corresponding lung there is serious interference with the respiratory act. Should the pulmonary tissue be involved in the wound, there is likely to occur emphysema, from the entrance of air into the areolar tissue of its parenchymatous structure, so as to effectually prevent the alternate expansion and contraction of the bronchial ramifications.

The former condition of pneumothorax may be a result of air escaping from the bronchial tubes when wounded, even when the external incision or puncture may be of a valvular nature, which does not admit of the entrance of air from without.

If the external wound is patulous, the ingress and egress of air occurs with each act of expiration and inspiration, inducing the condition of traumatopnœa. This is a most unpleasant result, and introduces a grave complication in the nature of the case.

There is also, most frequently, sanguineous extravasation into the pleural cavity, from such injuries, and if the lung has not become collapsed from the entrance of air, its function of respiration is impeded, if not obliterated, by the blood pressure.

Should the parenchymatous structure be involved in gunshot or punctured wounds of the lungs, there may be emphysema to a greater or less extent, throughout the cellular tissue of the thorax and adjacent parts.

The constitutional or systemic effects of any violence to the thorax depends upon the amount of shock in the first instance or the inflammatory process which is developed subsequently.

The greatest diligence on the part of the surgeon is requisite to avert the immediate fatal result of penetrating chest wounds. Apart from the general manifestations of chest wounds there are local effects from mechanical causes, which require our consideration.

One of the most serious consequences of violence to the walls of the thorax is rupture of the lungs. A fall upon some solid body or the pressure of some heavy weight, while the lungs are greatly distended by closure of the glottis, induces rupture of the pulmonary tissue, with all the serious results of pneumothorax and hæmoptisis. This may occur even without an abrasion upon the surface of the chest; and the history of such

[1] Read before the Surgical Section of the American Medical Association, at the meeting in Washington, D. C., May 6th, 1891.

an accident is the only explanation of the grave condition within the thorax. A forcible impression upon the walls of the chest may fracture the sternum or ribs and drive either inward so as to lacerate the lungs or the heart, leading to immediate or remote serious effects.

One of the grave consequences of an opening through the chest wall is the protrusion of a portion of the lung, constituting a hernia. If this should occur under the observation of a surgeon, he would find little difficulty in returning it and retaining it within by a compress. But most frequently it has been exposed for some hours and has become engorged, so that it is entirely impracticable to reduce it without enlarging the opening in the walls of the chest. This would seem the most feasible mode of relief, if the vitality of the tissue had not been impaired by the constriction. But it is generally held to be safest, either to allow the protrusion to remain and slough away or to assist its detachment by placing an elastic ligature around the neck of the hernial tumor. The edges thus become agglutinated and the lung is occluded. Then may also occur laceration of the lesser or greater blood vessels of the thorax calling for prompt relief, if the injury does not prove immediately fatal.

It has been proven by subsequent observation of the effects, that lesions of the heart have healed and that injury to the coats of the large arteries are not necessarily fatal. But there is no instance on record of a wound of the vena cava without a fatal result. The thoracic duct, in like manner, cannot be wounded with impunity, and the escape of the lymph terminates in death.

While the ligation of the intercostal arteries, the internal mammary and the subclavian is attended with difficulty, the hæmorrhage from them rarely may be controlled, and the patient should not be abandoned to his fate. If blood has accumulated within, it may be withdrawn by suction or its escape may be prevented by position.

Those who have had the largest sphere of observation in this branch of thoracic surgery, will best understand the uncertainty hanging over pulmonary disorders resulting from violence. Commencing with the doubts as to the production of traumatic pneumonia, and running through the abscesses of the parenchymatous structure of the lungs, it is remarkable how little is finally and definitely determined as a guide for practice in thoracic injuries.

It will be found, upon attempting to analyze the reports of such lesions, that quite a variety of opinions are entertained by different observers, and that really no methodic treatment has been adopted generally by the medical profession. I know of no work on surgery which lays down any fixed rule for the practitioner in the management of wounds of the chest.

The contributions to the literature of traumatism of the chest in Holmes's System of Surgery, Vol. I, in The International Encyclopædia of Surgery, Vol. II, in The Reference Hand-book of Medical Sciences, Vol. IV, and in The Annual of the Universal Medical Sciences for the years 1889–90–91, represent fairly the status of this branch of surgery. Those who seek to keep abreast of the recognized data, may learn from these works what has been accomplished for the relief of this class of injuries. It will be noted that there are conflicting views in regard to the proper treatment of some of the consequences of penetrating wounds of the chest, dependent, no doubt, to a great extent, upon the different stand-points from which observations are made. While there is a correspondence, for the most part, among different authorities, in the propriety of closing the external opening in the wall of the chest, when the amount of blood in the pleural cavity is small, contradicting opinions are expressed when it is large.

To define more clearly the attitude of those who have written upon this topic, I may state that individual views of the nature of such injuries, with the steps recommended for their relief, rest very much upon personal observation and not upon the consensus of general experiences by the profession.

There are articles upon thoracic wounds in most of our standard works on surgery, presenting many points of a practical bearing, as viewed by the author. Yet, with such material differences in their application, under the emergency of treatment, as to avail little for the practitioner.

While we should not overlook the writings of former days, it may be stated that little progress has been made in the elucidation of wounds of the chest since the work of Gross and Agnew were presented, and some of the more recent authors, as Wyeth and Roberts, have touched upon chest injuries very briefly. While Senn ignores, with few exceptions, traumatic developments of the thorax, many important data, illustrating the results of gunshot wounds of the chest are given in The Surgical History of the War, published by the U. S. Government, and

the statistics of non-penetrating and penetrating wounds of the chest, therein presented, demonstrates the gravity of the latter as compared with the former in a most conclusive manner. This, however, only confirms the results of the records of military operations throughout the world, showing that about 1 per cent. of non-penetrating wounds of the chest prove fatal, while over 65 per cent. of penetrating wounds terminate in death at an early period after the injury.

One of the practical questions of greatest moment in regard to the hermetical sealing of gunshot wounds of the thorax, remains unsettled.

Experiments upon the inferior animals, commencing with those of Houston in 1728, for illustrating the effects of punctures and incisions into the thoracic cavity, have been attended with such different results upon the lungs, that it is yet undetermined whether collapses ensue directly from these wounds. There is such an intimate relation of the surface of the lungs to the costal pleura, that something must separate them for the occurrence of pneumo-thorax, and hence it occurs that openings are not always followed by this result.

It is held that the falling away of the lung is not a uniform consequence of a penetrating wound of the chest. If the wound is small, or if it is at a distance from the free margin of either lobe, the expanded lung remains in contact with the costal pleura.

The adhesion of the two pleural surfaces is illustrated by an experiment of Surgeon A. H. Smith, in which, in a recently killed animal, an opening was made in an intercostal space, midway between the sternum and the spine. The lung did not collapse, but on making another in the same intercostal space close to the sternum, the outer surface of the lung was observed to slide backwards, though still remaining in contact with the chest walls, until the edge of the lobe came opposite the first opening. Then for the first time the air entered here, and the pneumothorax became complete.

Gordon and McDonald found that with small tubes introduced into the chest, the breathing became quick and laborious, while the lungs had fallen away from the chest walls for an inch. After four minutes, they enlarged the wounds and put in tubes, whose united calibre was twice that of the glottis. The respiration then became very laborious. On closing the wounds, however, and applying friction to the chest, the respiration was restored and in ten minutes the animal was able to walk about. It was killed on the 5th day and nothing notable way found in the chest.

Dr. Northrup reports some experiments on animals, contradicting the statements of Samuel West, that the force of cohesion sufficed to maintain the lung in complete expansion when the parietal pleura was punctured. Further experiments were made in which a dog's two pluræ were fitted with double-flanged canulæ, stoppered with corks. Until the dog recovered from ether the two corks were left in place. When fully recovered one cork was withdrawn, and the dog scarcely suffered dyspnœa on moderate exercise. When both corks were removed the dog tumbled about for two minutes and succumbed to some dyspnœa, which again entirely disappeared on replacing the corks.

These results throw some light upon the practical resort to closure of the external openings into the pleural cavity as a curative measure in cases of penetrating wounds of the chest.

Howard's proposition to the Surgeon General of the U. S., during the war, to test the process of hermitically sealing the external orifices of gun-shot wounds of the chest, met with so much prejudice on the part of the surgeons of the Federal army, that it was used in a limited number of cases. It is also inferred that the conditions under which this measure was tried, were not favorable to its success, as the most grave cases were the subjects. Judging from my own experience of the good effects of closing penetrating wounds of the chest, and from the records of cases thus treated by others, it seems unfortunate that hermetical sealing was not applied on a larger scale, so as to afford the statistics for a final and conclusive decision as to its merits. Independent of the recognized advantages of closure in the lesser accumulations of blood in the pleural cavity, it is held by some, with a show of practical discernment, that in the most extreme cases of thoracic hæmorrhages, the flow of blood externally should be arrested by plugging the orifice, so as to favor the coagulation of the blood within, and by compression upon the lung to prevent further extravasation.

If this course is applicable in the most aggravated condition of penetrating wounds of the chest, as well as to the simpler form in which there is a slight hæmorrhage into the pleural cavity, why may it not prove serviceable in the intermediate accumulations

of blood in the thorax, and thus be applicable to every variety of penetrating wounds of the chest?

It is not expected that a general rule can be laid down, without exceptions, for the immediate and complete closure of all penetrating wounds of the chest. There must be certain preliminaries observed in the preparation of the patient for receiving the benefits of such procedure, so as to close the orifice with the least blood in the cavity of the pleura, that is possible. Placing the patient so that the opening shall be the most dependent part, with a firm bandage around the thorax, and making the occlusion immediately after the expulsion of air and blood from the wound, by forcible inspiration, should promote a favorable result.

If the case is complicated with emphysema, involving any considerable portion of the surface, plugging the orifice with a condom stuffed with sponges, as has been suggested for the arrest of hæmorrhage from an intercostal artery, will prove efficient in preventing the escape of air into the cellular tissues, and at the same time accomplish complete occlusion of the thoracic cavity.

A comparison of this procedure may be made with that in which the air enters the cavity of the pleura and induces collapse of the lung, thus arresting the flow of blood from the wounded darenchyma, with a tube in the opening, as recommended by Packard, for prevention of emphysema. In this latter, the air pressure is supposed to arrest the bleeding. In the other condition, blood clot presses upon the lung so as to control the hæmorrhage.

The variable influence of the air in the pleura, with more or less air entering the lung by the inspiratory act of the sound side, renders this recourse very doubtful in permanently controlling the escape of blood from a wound of the lung.

On the contrary, the formation of blood-clot, within the pleura keeps up a pressure which can be relied on to prevent the further bleeding from the pulmonary lesion. All those who have observed the relief of distressing dyspnœa, by closing an open wound of the chest, concur in its great benefits.

It may be inferred from the favorable progress of cases in which a large accumulation of blood has remained in the pleural cavity, that its gradual absorption occurs. If the air is completely shut off from without, of course, germs cannot enter to set up decomposition in the mass, even should there be a perforation of the bronchia; as it is held that air passing through this sieve-like structure is rendered innocuous.

With the larger death rate from penetrating wounds of the chest, treated without special reference to the process of occlusion, the result is not likely to be more serious from a uniform adoption of sealing hermetically all external openings of penetrating wounds of the thorax. If the worst consequence of this procedure ensues in purulent development, there is open to the surgeons such measures of relief as have been adopted successfully in emphysema from other inflammatory processes.

In this connection, a few cases which have come under my observation, may serve to illustrate the open and closed methods of treating wounds involving the thoracic cavity. Many instances of gun-shot wounds of the chest were brought to my attention as Chief Surgeon of Division during the civil war in this country. But I had no opportunity of following up the subsequent course of these injuries; and would refer to reports of such cases in The Surgical History of the War for the results. I will give, however, an outline of some characteristic cases, occurring in my own private practice and in consultation with others, during the past few years.

One case had a pistol-ball wound at short range between the fourth and fifth ribs, on the right side, in front, and ranging downward. All the physical signs were present, indicating a wound of the right lung, with extravasation of blood into the pleural cavity. It was kept open for a time but closed afterwards spontaneously and terminated fatally.

Another case, in which a ball from a large Colt's revolver, traversed the left side of the chest, entering through the lower border of the pectoral muscle and escaping between the ninth and tenth ribs near their cartilages, instead the pleural cavity. There was a discharge of frothy blood from the posterior wound and the physical signs of extensive sanguinary extravasations into the left pleural cavity.

The heart was perceptibly pressed over to the right, carrying the apex beyond the median line. While no suture was used to close the wounds, they were hermetically sealed by antiseptic dressings; and, notwithstanding considerable constitutional disturbance subsequently, the patient made a good recovery.

A third case was a child, accidentally shot, the pistol ball entering through the ensiform cartilage and ranging upwards,

no precaution was used to close the wound, and the patient died from emphysema.

The fourth case was from a pistol shot which entered just below the ensiform cartilage ranging upwards to the right and lodging above the eighth rib, thus passing through the diaphragm and lower portion of the right pleural cavity. The external hæmorrhage was not pronounced, but the presence of blood in the chest was inferred from the physical signs of dullness upon percussion and diminution of the respiratory murmur under auscultation.

There seemed to be no indication for occlusion of the external wound and it was therefore left open. As there may have existed complications involving the abdominal viscera, the fatal termination on the fourth day cannot throw any light upon the true cause of death.

The fifth case affords an instance of a pistol ball entering the chest, immediately over the heart, traversing the mediastinum and lodging upon the sixth rib of the right side, just behind the posterior axillary line.

The external wound was occluded, and the ball was not removed until after the general shock and slight inflammatory reaction had passed off. The patient made a good recovery by the strict observance of masterly inactivity.

This case, with that preceding, having the ball lodged superficially for several days before removal, seem to emphasize the caution against cutting down and extracting a ball under such circumstances, at the outset.

Time should be allowed for adhesive inflammation to block up the communication with the cavity, as otherwise a direct counter opening into the chest must result.

I recall, in this connection, after the first Manassas battle, allowing a minnie ball, which was impacted in the clavicle and first rib, to remain, but by its extraction the chest cavity should be exposed; but the final result of the case is not known.

The practice of removing balls lodged between ribs, which is inculcated in Agnew's Surgery, without proper limitation, is more honored in the breach than by the observance. It is evident that the immediate extraction of a ball from the border of a rib, after it has traversed the chest, must leave an opening into the cavity of the pleura and aggravate the gravity of the case.

A counter opening in muscular structures for the removal of a ball which is near the surface, does not in the experience of surgeons of large practices, retard the healing process along the line traversed by the ball. But with the conditions presented in a gunshot wound of the thorax, when an opening already has been made by the entrance of the ball it is not good surgery to make another for the extraction, until the wall behind has become solidified.

In illustration of the effects of punctured and incised wounds of the chest, a few examples of knife-stabs, which have occurred in my practice will be added.

A case of stabbing, between the fourth and fifth ribs, in front of the anterior axillary line on the left side was accompanied with localized emphysema. While there was evidence of sanguineous effusions in the pleural cavity the bleeding was profuse externally.

There was a slight dyspnœa upon lying down which was relieved in the sitting posture. The wound was closed by adhesive plaster with a compress and bandage and the patient recovered without untoward symptoms.

It has not been found necessary to use stitches in these wounds inflicted by the thrust of a knife blade, as the coaptation is effected by the above process, so as to hermetically close the opening in the chest. In another case a stab was inflicted between the sixth and seventh ribs over the left side near margin of the scapula, from which blood and air escaped at each inspiration, with considerable accumulation of blood in the pleura, and hæmoptysis.

The external wound was closed immediately after a gush of blood and air from the opening. The patient became more quiet afterwards. This case was accompanied with traumatic pneumonia and marked constitutional disturbance, but ultimately recovered.

A third case came under my observation in which a knife blade entered between the fifth and sixth ribs on the right side, penetrating the lungs and attended with the accumulation of blood in the pleural cavity. There was no very marked dyspnœa, and as the flow of blood externally, gradually diminished with the dependent position of the wound, it was not thought that closure of the opening was indicated.

Inflammatory symptoms soon developed, with subsequent adhesion of the pulmonary and parietal pleura. In the end suppuration of the lung found its way through the external opening. A weak solution of carbolic acid was daily, injected into the suppurating tract, and the healing process progressed favorably, so that there remained,

eventually, but slight impairment of the lung from the injury.

The inference from these cases goes to prove that suppuration is more likely to occur when the incised wound is left open than when it is closed immediately and kept occluded.

A fourth case was seen some days after a stab had been inflicted between the seventh and eighth ribs, and there was a protusion of a small globular mass of pulmonary tissues from the wound. As it had occurred shortly after the injury and was tightly constricted by the margins of the wound in the thoracic wall, the neck of the hernial tumor was encircled with an elastic ligature, as most likely to effect a prompt and safe detachment of the mass. In a few days it separated, and there was no further trouble with the case. If there was any escape of blood into the pleura it was most effectually shut in by the plugging of the opening, and afforded an illustration of the favorable issue of hermetical sealing in penetrating wounds of the thoracic walls.

A RÉSUMÉ OF THE HISTORY AND PRACTICAL APPLICATION OF HYDROGEN PEROXIDE IN SURGICAL AFFECTIONS.

BY S. POTTS EAGLETON, M.D.

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Hydrogen peroxide was discovered by M. Thenard, a French chemist, in the year 1818. Since which time it has, like many other therapeutical remedies, laid dormant, occasionally being brought forward by some "enthusiast" and its virtues highly extolled for a time. But the drug, unequal to the task of proving all that had been said in its favor, was again and again returned to its stall of oblivion. Within the past few years, it has been introduced to the notice of the medical profession, on account of its antiseptic properties, and apparently has awakened into active therapeutic life.

Most of the preparations or hydrogen peroxide in the market to-day, according to C. T. Kingzett,[1] are made by the process which originated with its discoverer. Physically it is like water, transparent, colorless, odorless, and generally tasteless; occasionally, however, a slight metallic taste may be noticed. The specific gravity varies, generally it is about 1,450. It remains liquid at zero. Chemically, it is one molecule of water in feeble combination with an atom of oxygen, (H_2 0+0—H_2 0_2). That this extra amount of oxygen does not show a strong affinity for the water, with which it enters into combination, is made evident by the rapid decomposition of the compound into its original constituents (water and oxygen) when brought into contact with any surface containing pus. It is this factor of being readily decomposed and setting free nascent oxygen which renders it of practical utility in the treatment of disease.

In looking over the literature of the subject, I find that Dr. B. W. Richardson,[1] in 1862, called attention to the action of hydrogen peroxide in an able article upon the subject, which excited wide-spread interest in the profession at that time and has led to many experiments with the drug, both in surgery and medicine.

It is my purpose to confine myself in its study, entirely to the treatment of surgical affections. Before referring to the results of my own experience, during the last few months, I will briefly allude to some of the most important monographs which have appeared from time to time in our medical journals. C. T. Kingzett[2] believes that the substance exhibits striking antiseptic effects and is capable, even in very small quantities, of arresting the so-called process of fermentation which is originated by living organisms. He further calls attention to the fact that care should be exercised in making the solution neutral before using the same, and yet admits that neutral solutions are by no means as staple as are those of a slightly acid reaction. In closing his monograph he states that the expectations that the compound would prove of peculiar benefit in the treatment of wounds have been amply realized in the practice of several noted surgeons of France, among whom may be mentioned M. Baldy, M. M. Reynard and M. Reau. In summing up his article he further says that, in his opinion, hydrogen peroxide is far superior to phenol, and that it has been demonstrated beyond question that all wounds treated with peroxide of hydrogen have progressed well, healing generally by first intention.

A. E. Prince,[3] speaks most favorably of

[1] C. T. Kingzett, *British Medical Journal*, London, 1882, vol. II, p. 1087.

[1] B. W. Richardson, Tr. M. Loc. Lond., 1862, vol. II, pp. 51–53.

[2] *Ibid.*

[3] A. E. Prince, St. Louis, *M. and S. Journal*, 1884, vol. XLVI, pp. 246–252.

the results obtained with this remedy.

It is as a local therapeutic agent that it has asserted its supremacy and secured the attention of medical pioneers in all departments of medicine. Believing, as he does, that in comparison with iodoform it is inferior as an antiseptic, but, like the latter, it produces little or no irritation, when used about tender organs. C. E. Shelly[1] considers it to possess anæsthetic properties, and at the same time claiming for the drug, not only a pus-destroyer, but that it is an actual stimulant to the surface of wounds. To the carefully conducted experiments of Dr. P. Miguet, quoted by W. D. Bizett,[2] we owe the establishment, on a firm basis, of hydrogen peroxide as a positive germicide. The line of experimentation pursued had the following aim: to determine the quantity of various substances, commonly used as germicides, which, added to a quart of beef tea, would prevent decomposition. Miguet found among a long list of substances used by him, that only two were more powerful than hydrogen peroxide. The following table shows the relative strength, according to his experiments, of the four most powerful germicides:

Biniodide Mercury	0.025 grains
Biniodide Silver	0.03 grains.
Hydrogen Peroxide	0.05 grains.
Bichloride Mercury	0.07 grains.

The results thus obtained, place hydrogen peroxide in the lead of bichloride mercury as a germicide, with the advantage, also, of being absolutely void of any toxic action, while the corrosive sublimate is a most virulent poison. Bizett[3] claims that when the pure peroxide, which is syrupy in consistence, is brought into contact with living tissues, it acts as a direct caustic. Various experiments were made by H. Gifford[4] directly with the *disease germs*, thus testing the germicidal action of the peroxide. Two methods of determining its ability to destroy germs, were used, that of Koch and his own well-known method. The preparation of peroxide used, was that of Chas. Marchand's (15 vol.). Gifford found that the white and yellow cocci, as well as the bacilli anthrax, were killed in exposures of from ¼ to 1½ minutes. It required but ¼ minute to destroy fully developed anthrax spores. He further found that the solution exposed for 40 days, to a temperature of 68–75° killed the yellow pus cocci in from 10–11 minutes. The same solution of peroxide, when diluted with *four* times its bulk, requires an exposure of 30 minutes to kill the pus cocci. If diluted with an equal volume, it kills within ¼ minute. After an experience of six months, J. N. Love[1] sums up the action of hydrogen peroxide as follows: It is a most efficient means of cleansing purulent surfaces, deep cavities, and sinuses, stimulating the healthy process in ulcerating parts. As a destroyer of microbes, a cleanser and securer of comfort, it is of great value as a local application.

My own experience with this drug in surgical affections, during the past ten months, has been most satisfactory. During that time I have used the remedy in the following affections: Abscesses (acute and chronic, of various kinds), suppurating glands, sloughing gangrenous wounds, empyema of the chest, necrosis (general and localized), suppurative otitis media, and wounds of all descriptions. The ages of the cases treated, varied from two to thirteen years. The mode of applying the peroxide was as follows: All cavities, crevices, etc., were syringed with the bichloride of mercury (1–2000, to 1–6000) and then carefully cleansed with the hydrogen peroxide (Marchand's).

At first one volume of this solution was diluted with two to three times its bulk. Later on, I used the full strength. The first effect noticed after applying the peroxide, was the rapid oxidation of all purulent or bloody material, which would cause the distention of crevices, no matter how minute with the oxygen, which was eliminated as a frothy (often yellowish, depending upon the quantity of pus present) bubbling substance. After the oxidation was completed, the wound was always left in a clean, sweet condition, absolutely free from pus. The wounds were then gently dusted over with iodoform and the usual antiseptic dressings of gauze, etc., were applied. On removal of the dressings, a few days later, it was noticed that the wounds were in almost every instance cleaner (especially marked in acute cases), more healthy in appearance and with a decided diminution in the quantity of pus secreted. The thought being suggested, that possibly the bichloride and not the peroxide was instrumental in producing the favorable results noticed, I commenced a series of control experiments. I would, at one dress-

[1] C. E. Shelley, *Practitioner*, Lond., 1884, vol. XXXII, p. 196.

[2] W. D. Bizett, *Atlanta M. and S. Journal*, 1888–9, N. S.

[3] *Ibid.*

[4] H. Gifford, *Med. Rec.*, N. Y. 1888, vol. XXXIV, p. 243.

[1] J. N. Love, *Phila. Med. Times*, 1887–8, vol. XVIII, pp. 362–364.

ing, use simply the bichloride of mercury, following this, at the next dressing, with the peroxide. Thus making actual comparisons in the same cases. After several alternate dressings as above, I found *without exception* that the hydrogen peroxide perceptably diminished pus formation to a much greater degree than simply the bichloride alone.

The belief that iodoform should not be used in conjunction with the peroxide, for fear of liberating free iodine, which, as a direct irritant, would defeat the object in view, is, I believe, erroneous. I found that when a quantity of iodoform was placed in a small receptacle covered with the peroxide solution and then set aside for periods varying from three hours to three days, on being treated chemically for free iodine, with the ordinary starch test, gave negative results. Although one drop of a solution of iodine, on being added to the same solutions, gave a brilliant reaction on addition of the starch.

In all cases in which the peroxide was given a fair trial, I have observed a direct healing effect upon the granulating tissues. It is therefore evident that owing to its oxidizing action on the pus and the diminution of the purulent secretions after its use, it does, either directly or indirectly, cause a destructiou of the anthrax bacillus. In concluding my article, I think from the clinical as well as the experimental evidence which has been deduced, we can safely sum up the action of peroxide of hydrogen in the treatment of surgical affections, as follows:

1. Hydrogen peroxide is a positive germicide and a possible stimulant to granulating tissues.

2. Owing to its especial property of eliminating oxygen, it is of unparalleled value in the distention of suppurating sinuses and cavities, especially in the mastoid region or where it is almost impossible to reach unhealthy surfaces by other means.

3. The diluted solution is perfectly harmless and can with safety be used in any quantity.

4. The strong concentrated solution, syrupy in consistence, is a direct irritant to all tissues and should never be used.

5. It possesses healing and cleansing qualities as well as those germicidal in nature.

6. When exposed to light it loses strength; care should therefore be exercised in keeping the bottles well stopped with rubber corks, and in a cool, dry place.

7. Fibrin, cellular tissue and some metals, instantly decompose it. In contact with sugar and starch it eliminates carbon dioxide (CO_2). Albumen, gelatine, urea and cutaneous tissues have no affect upon it, while ammonia, aconite, tobacco and hydrocyanic acid increase its stability.

8. In washing suppurating surfaces, it should be used until oxidation ceases, thus showing a complete destruction of all existing purulent material.[1]

TETANY.[2]

BY E. H. SMALL, M. D.,
PITTSBURGH.

On November 29th, 1890, I was called to see M. B., a fat, healthy-looking, breast-fed baby boy, aged 11 months. His hands and feet were much swollen, œdematous, and of a cyanotic tinge. His mother said that they had been "spotted," *i. e.*, ecchymotic, before I had come. The fingers were strongly flexed at the metacarpal phalangeal joints, while the phalangeal joints were as strongly extended. The thumbs were adducted and flexed. The feet were extended at the ankles as in talipes equinus, while the toes were strongly flexed. Attempts to straighten out these contractions caused great pain. The mother said that at first the child cried a good deal and that his hands and feet were tender and painful. So much were the hands and feet, particularly the dorsal surface, swollen, that I suspected nephritis. The urine, however, contained no albumen. The child had always been strong and healthy, having had no other sickness.

Two days before, Thanksgiving, the child had been given some turkey and cranberries to eat, which had caused indigestion. When I called he had had no satisfactory movement of the bowels for some time. I gave him two one-half grain doses of calomel one hour apart, and twenty drops of the elixir of bromide of potassium four times daily, and told the mother to rub his hands and feet with alcohol and water. The next day he was much better. I directed hot fomentations to be applied to the hands and feet instead of the rubbing with alcohol and water. In a week the child was about as well as usual.

[1] Read before the D. Hayes Agnew Surgical Society of the undergraduates of the Medical Department of the University of Pa., February, 1891.

[2] Read before the Allegheny County Medical Society, March 17, 1891.

Four weeks before his gums had been scored by another doctor. A few days before my visit, the two first teeth had appeared, *i. e.*, at eleven months. The anterior fontanel was larger than normal for his age, and the costo-chondral articulations were rather more prominent than normal. He has an older brother and sister who are perfectly healthy.

When I first saw this case, I thought it to be one of tetany, and its course and termination have proved it to have been such. I had never before seen this disease in a child, but had seen one case in Vienna in a pregnant woman.

Although this disease has doubtless always existed, and although it was described as far back as 1831 by a Frenchman, M. Dance, as occurring in an adult, and in 1832 by another Frenchman, M. Tonnele, as a new convulsive disease of childhood, yet it is but seldom mentioned in the more common medical text-books. The name tetany was first given it by Dr. Corvisart, in 1851. Dunglison's Dictionary, 1874, speaks of "Tetanilla" diminutive of tetanus, saying that this disease is also called tetany.

Dr. Smith, of New York, defines it as "a disease in which there is a tonic contraction of the muscles, commonly those of the extremities, but sometimes also those of the face or trunk, produced by causes external to the nervous system, and usually of temporary duration." This definition shuts out true muscular contractions arising from disease of the brain or spinal cord, in which the contractions are both but a symptom, and not the disease itself. Henoch describes it under the name of "Idiopathischen contracturen" and regards it as a kind of abortive form of convulsions. Dr. Cherdle, of London, says, "Laryngismus, tetany and general convulsions are the positive, comparative and superlative of the convulsive state in childhood."

Causes: Cases are recorded between the ages of six months and sixty-one years. Most cases occur in infancy and childhood; more in males than in females. The most common cause seems to be disorders of the digestive system, as diarrhœa, habitual constipation, worms, and dentition. Charles Warrington Earle, of Chicago, gives a case of a healthy girl two and one-half years old, in whom tetany occurred on the day after she had eaten heartily of fried potatoes. Perhaps my case was caused by the turkey and cranberry sauce of Thanksgiving, two days before.

It may arise in persons who are in poor health from other diseases, as pneumonia, bronchitis, cholera, typhoid fever and dysentery. Exposure to wet and cold has seemed to cause it. Hence, some think it a rheumatic affection. Erb says: "Many physicians have regarded it as an exquisite example of rheumatic disease." In adults, commencing puberty, pregnancy, as in the case I saw in Vienna, and nursing, may cause it. Rhachitis is also regarded as a cause, which may hold in my case, on account of the delayed dentition, large size of fontanel and enlarged articulations.

Symptoms: In patients old enough to describe their symptoms, tetany begins with pain in the head and an uneasy, tingling, burning sensation in the limbs. In children, the objective symptoms are those first noticed. The peculiar shape of the hands and feet, their rigidity, and pain on pressure are the commonest symptoms. Generally the fingers and toes are flexed on the palms and soles, occasionally extended. At times the joints of the hands and feet are also affected, or the elbow-joint—so that the fore-arm appears flexed upon the humerus, the hands upon the fore-arm, and the foot upwards, or else toward the sole. The thighs may be adducted, or flexed, the legs extended or flexed, and the feet extended as in talipes equinus. The contractions are always bilateral and symmetrical. Attempts to straighten out the contractions cause pain. Œdema, with a cyanotic tinge of the back of the hands and feet and occasionally ecchymoses, produced according to Henoch, by the pressure of the contracting muscles on the intermuscular veins, is oft-times present. In severe cases the muscles of the trunk and head may be affected, but this is rare in children. Trousseau's sign—compression of the artery and nerve supplying the concontracted muscles increasing the contractions—can be sometimes observed. The electrical excitability of the nerve supplying the affected muscles is increased, as is also the patellar reflex.

Diagnosis: This may be made out by the peculiar grouping of the symptoms, the characteristic position of the extremities, and the absence of cerebral and general disturbances. Tetanus neonatorum and organic disease of the brain and spinal cord are the principal diseases with which it may be confounded. Tetanus generally occurs within a few days after birth, almost never after the first month; tetany is very rare under the age of one month. In tetanus the muscles of mastication are early affected; in tetany the con-

tractions begin in the extremities, and the muscles of mastication are never, or only in the last stages, affected. In tetanus the symptoms tend rapidly to become worse and worse, generally ending in death; in tetany as a rule, the child is soon well. Tetanus is in some way connected with injury to the umbilicus, or umbilical cord; in tetany, trauma has nothing to do with the case. In organic diseases of the brain the contractions are usually limited to one side, with other symptoms of brain involvement; in tetany the contractions are bi-lateral.

Prognosis: In children, tetany, when uncomplicated by grave disease causing it, almost always ends in recovery, though it may recur. The duration is from a few days to several weeks or months—indefinite.

Pathology: Since tetany in children is so rarely fatal, and then usually from the complicating or causative disease, but few autopsies have been made, and in these no lesions have been found which seem to bear a causal relation to the disease. Herz says that clinical phenomena indicate that the disease is due to anæmia of the cord.

Treatment: When the cause is known, especially when from diseases of the digestive system, its removal will soon be followed by the disappearance of the disease. Bromide of potassium in doses according to age should be used. Chloral and calabar bean are recommended. Envelope the hands and feet in hot fomentations, or use massage with alcohol and water. A child of fifteen months recovered in one week on gr. ¼ zinc sulphate and gr. $\frac{1}{12}$ atrophia sulphate, thrice daily. This is all that is necessary in children. In adults, canabis indica and morphia hypodermically have been used with good results.—(For discussion see page 587.)

Society Reports.

ALLEGHENY COUNTY MEDICAL SOCIETY.[1]

BY W. C. BANE, M. D.

CHLORATE OF POTASSIUM IN PHLYCTENULAR ULCERATION OF THE CORNEA.

It is almost a century since chlorate of potassium was brought to the notice of the medical profession as a remedial agent. In 1795 Dr. Garnet,[2] of England, used it in the treatment of disease. At one time it was lauded as almost a specific in many of the maladies to which mortal man is heir. However, years of clinical experience determined its real value, and it was assigned a place among the topical remedies. Though valuable when administered internally, in some conditions of the system, it has its deleterious effects,[1] having already caused 47 deaths.[3] Its therapeutic properties may be stated generally as those suggested by its chemical constitution and affinities, as a salt excepsionally rich in oxygen, it has without decomposition, the valuable property, *per se* by its mere presence apparently, of oxygenating or aerating the blood, and by so restoring or exalting this inherent quality of the circulating fluid, influencing to a corresponding degree nutrition and functional activity of the various tissues and organs of the body.[3]

In ulcerative diseases chlorate of potassium has been thoroughly tested during the past 40 years both internally and locally. Under Therapeutics, in the *North Am. Medico-Chirug. Review* for March 1858, p. 387, Dr. Dethan regards chlorate of potash "as an especial and incontestible remedy in ulcero-membranous stomatitis. . . . its topical application is sufficient, and in a short time the mucous membrane recovers its normal qualities and functions."

Dr. Gallaher, of Pittsburg,[4] lauded chlorate of potash in mercurial stomatitis, stating that, "'should there be ulceration of any portion of the mucous membrane of the mouth, I direct a weak solution of the salt to be applied to the denuded part several times a day; generally nothing else is required, the cure being accomplished in a few days." As a local application in ulcers of the lower bowel chlorate of potassium in solution gives excellent results, the ulcers healing rapidly.

I presume chlorate of potassium has frequently been used as a local application in diseases of the eyes, but I have only found one record, that of Dr. Landesberg, of Philadelphia, using it as a topical application in epithelioma of the eye-lids.[5]

Ulcers of the cornea, especially the phlyctenular variety, are frequently met with, usually developing as a little papule or pustule on or near the margin of the cornea. They may develop independently or as a

[1] Scientific Meeting, March 17th, 1891.

[2] Duncan's Annals of Med., p. 1797.

[1] Bartholow's Mat. Med., 4th Ed., p. 183.

[2] Dr. Coghill, Trans. Ninth Internat. Med. Cong., p. 26.

[3] Dr. Coghill, Trans. Ninth Internat. Med. Cong., p. 31.

[4] *Am. Journal Med. Science*, July, 1857.

[5] Medical Record, 1882, p. 674.

complication of some existing ophthalmia or catarrhal affection of the nares. A large percentage of the cases are strumous or scrofulous, consequently suffer from nasal catarrh.

The symptoms may vary as to their intensity, but we usually find photophobia, congestion and pain. The variation in the symptoms being influenced by the number of phlyctenules and the constitution of the patient. Constitutional treatment and regulation of the diet, etc., is invariably needed.

The first use I made of chlorate of potassium as a local remedy in ulcers of the cornea was in a case of serpiginous ulcer in Jan. 1882. Case—Mrs. S. C. H., *aet.* 50, constitution feeble. Having exposed herself in doing some out-door work while the weather was rough, that developed an ulcer in the upper, outer quadrant of the right cornea. When I first examined the eye the ulcer was about 2x3 mm. in size. There was photophobia, congestion of the conjunctiva and subjacent tissues; eye-ball, right side of the face and head painful, constitutional remedies prescribed. Locally atropia and weak solution of biborate of soda. One week later the ulcer had doubled in size and depth. Atropia acted as an irritant, morphia disagreed, they were both discontinued. As chlorate of patassium had served me well in ulcers of other portions of the body, I determined to test it on the corneal ulcer, and so directed a 5-grain solution to be instilled in the eye, as warm as could be borne, 3 or 4 times daily. From the time the chlorate was used the ulcer began to heal. Owing to loss of tissue there remained an opacity. Instead of the morphia the patient was given hydrate of chloral, with bromide of potassium, though chloral, when administered internally, acts as an irritant to the eyes in some cases, in this case it did not.

During the past five years of special practice, nearly four years of which I have had charge of the eye and ear department of the dispensary of the Western Pennsylvania Medical College, some 56 cases of ulcer of the cornea have come under my care. About two-thirds of these cases were of the phlyctenular variety. The chlorate has rendered good service in different forms of ulcers of the cornea, but rather better in the phlyctenular than in the other varieties. Not all of these cases were treated with the chlorate, as in some the washed mild chloride was applied, in others the ointment of the yellow oxide of mercury, and in a few a weak solution of the bichloride of mercury.

In the limited experience I have had in the treatment of corneal ulcers and the use of the above remedial agents, my convictions are that the chlorate in about 5-grain solution, used quite warm 3 or 4 times daily is the most soothing, and heals the ulcers more rapidly than any of the other agents tested. True, the warm water itself is of great advantage, but the chlorate is a valuable addition on account of its antiseptic action. It does not prevent bacterial evolution, but it does retard chemical decomposition of organic fluids.

DR. LIPPINCOTT: I never use chlorate of potassium in such cases. We have so many old remedies which will answer the purpose. I have found in my experience that the direct application of very hot water to the cornea is a good thing in these ulcers. The one class to which the doctor refers, generally extremely obstinate, I have treated by the direct application of water at a boiling temperature or steaming. I put a drop of water directly on the exposed cornea so that it steams as it comes out. One drop of the water touches the ulcer, and the effect is marvelous in some cases. The first case I tried it in was a little boy, aged about six years, who had been under treatment for a good while. Treatment had been followed for about three weeks without any material change for the better, and it occurred to me one day to apply the hot water in that way. Before that time could get no dilatation, none whatever, but after the first effort with hot water, the pupil dilated very widely indeed. A good recovery was made. Heat is applied constantly of course, but this was a new application of heat. This hot water treatment, it seems to me, is milder than applying a red hot iron to the ulcer. It seems to destroy less tissues than the hot iron, and it certainly answers the purpose in so far as my experience has gone.

DR. BANE: I simply wanted to bring this matter out. Hot water is certainly beneficial as Dr. Lippincott has stated, but it seemed to me that the chlorate shows an advantage, at least it has done so in my experience.

Paper by Dr. Small. See page 584.

DR. LANGE: I once saw a tetany follow diphtheria at the time paralysis usually follows. The description Dr. Small has given of his case, fits mine exactly. Tonic contractions of the muscle, lasting in my case ten days. The dorso-cervical muscles were not involved in my case, neither were the muscles of the lower jaw, and the clinical picture as a whole is different from tetanus. At that

time I had not been enlightened by Dr. Small's researches, and scribed this to some obscure nervous affection. I am glad to have heard Dr. Small's pathology, and merely mention my case as his etiology did not include diphtheria. Tetany in the infant is not a very rare disease; it is however in the adult. I do not remember having seen it in an adult. The symptoms given by the doctor correspond to the symptoms in my case. These cases generally recover without treatment.

Dr. Green: At the present time I have in charge a case or two of tetany, and one has been going on a full week. In the first instance, when I was called to see it, they reported that the child had convulsions. The child is 19 months old. There were no convulsions and no indications of convulsions having taken place. None of the usual symptoms that follow convulsions. I did not discover any peculiarity at that time in regard to the muscular contractions. I saw the case again in two days; at that time the discoloration of the hands and feet was well marked. Very tender on pressure, a case that might well be mistaken for rheumatism. The general condition of this child, when I saw her, was slight congestion of the lungs with slight bronchitis, and I discovered afterward that there was some derangement of the stomach. I used an injection of warm water, and when the matter had passed from the bowels, there was a considerable number of pieces of potato that had been fried before taken into the stomach. I think my case corresponds almost exactly with the case that Dr. Small has described. On my first visit, I regarded it as tetany, although I was not able to make a diagnosis. The case was well marked latterly.

Dr. Rigg: I would like to ask a question: Whether the doctor has observed any special contraction of the muscles with reference to the epidemic that has been prevailing for the last year or two? I refer to the epidemic called grip. There has been in my hands quite a good deal of contraction of the muscles, especially of the limbs, so much so that persons have been unable to relax themselves, and would generally require a quarter of a grain of morphine, and I have had to repeat that two or three times in an evening before the muscles would relax so that the patient could rest. I was very much pleased with the doctor's paper, and the question came up in my mind whether there might be some connection between tetany and the influenza of which I speak.

Dr. Ayres: This is certainly an uncommon disease. I have never seen a typical case of it. The cases of Dr. Rigg are not due to tetany, they are doubtless of a rheumatic character, caused by the cold or influenza, and possibly Dr. Green's case is similar. In one respect, the doctor's does not quite agree with the typical cases, and that is, that it was of brief duration, about a week if I remember aright. Tetany is paroxysmal, coming and going. If I understand the doctor rightly, his case was just one of tonic contraction, which relaxed and disappeared, and I believe there was no recurrence.

Dr. Stevenson: I think there are a great many diseases that because they are rare and infrequent are not much written of or talked about. Now tetany is a disease that has been very clearly before the profession for thirty years, yet the fact that perhaps we do not see this disease and do not hear it talked about, makes it seem like something new. Some of the speakers have got the idea that it occurs almost exclusively in childhood. I think I will have to differ from that, for Professor Trousseau, when he first discussed the disease, described it as a rheumatic contraction occurring in nursing women. In his hospital he had seen a number of cases occurring in the nursing wards, and he published a description of them. The paper, as I understand it, did not exactly describe the contraction as I understand the disease. This contraction is a spasmodic affair that comes on and may last a few minutes and may last as long as twelve hours, and relax and come again. A contraction that would last twelve hours would be considered one of unusual duration. Now then, the paper, as I understand the question, describes the disease as terminating in a week. This is possible in a mild case which may terminate within a week and not return, though the rule is to have these contractions repeated frequently during a day or several days, if they are sick long enough, in which the patient will seem well, and the condition will occur and be repeated again and again, and the whole duration of the disease is very frequently several months. I saw a case of this character twenty years ago. It occurred in a pregnant woman. She was ten years married; she had given birth to seven children, and as a result she was very feeble and delicate, worn out, exhausted by her frequently recurring pregnancies; she was all the time either carrying a baby or nursing one during these ten years. In about the sixth month of her pregnancy this condition occurred. She

got spasmodic contractions of the toes, and then of the ankles, and by and by it involved two fingers on each hand and the thumb. She would sometimes have these paroxysms come on and last for an hour, and relax for a time, and come again probably for a week, then perhaps for a week or ten days she would be wholly clear of the spasms, then they would recur again, and this condition contined until after she was delivered of her child. I saw another case of tetany in a boy, a colored boy, who lived in a rather destitute condition; the family were exceedingly poor, and lived in a stable simply weatherboarded with no internal lining. They had few bed-clothes and were scarce of food. This boy was driving a wagon and doing chores of different kinds through the town; he was aged about sixteen years. He drove a milk wagon and was out in very severe weather, and only partially clothed. I think the privation and the cold he was subjected to at home and outside, brought on this tetany. He had contractions of his hands and of his feet and contraction of the abdominal muscles and the diaphragm, and he died. He had no lock jaw, he had none of that sensation around the chest that would indicate tetanus, but this spasm of the diaphragm occurred at intervals. He had one or two slight attacks of it on the first day, he had two or three slight attacks of it in the night, and the next morning he had a severe attack of the diaphragm and died.

DR. SMALL: As I said in my paper, I do not think this disease is mentioned in the common medical text books. The most I have read on it I have seen in the last two or three years in the *Archives of Pædiatrics*. I presume that I so easily made out a diagnosis of this case, for the reason that in three numbers of that journal, Dr. Smith, of New York, published a very exhaustive article on the subject, and he had some pictures, one of which is almost precisely like the appearance of my patient when I first saw her. His article is very exhaustive, and it may be that he got it up simply as regards tetany in children, and although this article I mention speaks of it in a child, I think I mentioned in several places in my paper as to symptoms in adults, although it was written with a view of describing tetany in children. As to duration, the gentlemen seem not to have understood me rightly. I stated it may last a week or a month or indefinitely. As to diphtheria being the cause, as far as I have observed, I have not seen that given as a cause, nor have I seen influenza given.

SELECTED FORMULÆ.

LOCAL ANÆSTHESIA FOR SLIGHT OPERATIONS.

For operations upon small abscesses, opening fistulous tracts, or removing superficial growths, it is recommended that local anæsthesia be secured by a spray of the following solution:

℞

Chloroform	10 parts
Sulphuric ether	15 "
Menthol	1 part. M.

The anæsthesia which is thus obtained lasts from two to ten minutes.

—*Lon. Med. Record.*

POWDER FOR ACUTE ECZEMA.

La Semaine Medical gives the following prescription of Alexinski for this condition:

℞

Oxide of Zinc	15 grains.
Subnitrate of bismuth	30 "
Powdered starch	1½ drachms.
Powdered Lycopodium	" "

This powder is to be dusted over the parts which are affected, night and morning.

GARGLE FOR ACUTE TONSILLITIS.

℞

Ammoniated tincture of guaiac, Compound tincture cinchona,	of each 6 drachms.
Chlorate of potassium	2 "
Honey	6 "
Powdered gum arabic a sufficient quantity.	
Distilled water enough to make 4 ounces.	

From one-half to one teaspoonful of this should be used as a gargle in a little water every two or three hours.—*Journal de Médecine de Paris.*

PRESCRIPTION FOR TETANUS.

La Semaine Médicale states thay Mayer employs the following prescription in the treatment of tetanus:

℞

Hydrochlorate of morphine	⅛ grain.
Chloral	15 grains.
Bromide of sodium	20 "

Make into one powder, which should be wrapped in wax paper; give from three to six of these powders each day.—*News.*

INJECTION FOR TUBERCULAR DIARRHŒA.

℞

Olive oil	6 drachms.
Guaiacol	10 drops.
Water	8 ounces.
1 yelk of an egg.	

—*Journal de Médecine de Paris.*

ANTISEPTIC GAUZE.

For plugging the uterus, Bar (*La Pratique Médicale*, Feb. 17, 1891) has employed with advantage a gauze medicated with retinol iodoform. It is used as follows: The gauze, after being boiled in strong carbolized water and well dried, is dipped in a mixture, the formula of which is not yet very precise; but the one used in the service of Bar consists of—

℞

Retinol	15 drachms.
Wax	1½ drachm.
Iodoform	8¾ drachms.

The employment of this mixture, as applied by means of the gauze, appears to present unusual advantages. Tampons made with gauze, prepared in this manner, are especially useful, inasmuch as they are apt to leave a good coating of iodoform upon the vaginal or cervical service and thus assure complete asepsis of the mucous membrane.

A GARGLE FOR THE RELIEF OF FŒTID BREATH.

The *Revue Générale de Clinique et de Thérapeutique* gives the following prescription for the relief of this condition:

℞

Saccharine, Salicylic acid, Bicarbonate of Sodium,	of each...15 grains.
Alcohol	1 ounce.
Essence of peppermint	10 drops.

A teaspoonful of this is to be placed in a wineglassful of hot water, and used as a gargle, once or twice daily.—*News.*

FORMULA FOR DYSMENORRHŒA.

Monin (*L'Union Médicale*, March 5, 1891) recommends the following for dysmenorrhœa of chlorosis:

℞

Spirits of melissa, Tincture of saffron, Tincture of iodine	of each, 1½ ounces.

Mix. Twelve drops daily, before each of the two principal meals, for two months.

Every eight days, a warm bath, containing three and one-half ounces of chlorate of ammonia.

A PLEASANT VEHICLE FOR CASTOR OIL.

The following mixture is recommended as an efficient means of disguising the taste of castor oil. The only disadvantage is its bulk in proportion to the dose of oil administered.

℞

Castor oil	30 parts
Bitter almonds	2 "
Sugar	30 "
Gum tragacanth	½ "
Orange flower water	10 "
Water	120 " M.

—*American Druggist.*

TOPICAL APPLICATION FOR NASAL DIPHTHERIA.

Raulin recommends that the membrane be detached by antiseptic irrigation and the raw surfaces covered with the following:

℞

Lactic acid	gr. xxx
Carbolic acid	gr. xlv
Pure glycerine	one ounce.

—*Revue Gén. de Clin. et de Thérap.*

ANTIPYRINE IN THE TREATMENT OF GONORRHŒA.

In the *Revue Générale de Clinique et de Thérapeutique* it is stated that Brindisi employs the following solution as an antiseptic lotion in the treatment of gonorrhœa:

℞

Antipyrine	45 grains.
Sulphate of zinc	4 "
Rose water, Cherry-laurel water	of each 2 ounces.

Label, "To be used as an injection."

FEVER MIXTURE FOR CHILDREN.

The following is an excellent fever mixture for a child one year old:

℞

Antipyrine	gr. viij.
Aq. cinnamomi	
Syr. aurantii cort.	aa f℥j.

M. Sig. ℥j. every two hours until fever subsides.

The antipyrine being soluble, goes into the circulation more rapidly than acetanilide, and so breaks the fever sooner.—*Hollopeter.*

NUTRITIVE ENEMA.

℞

Beef broth (fresh made)	viii ounces.
Wine	iv ounces.
Yolk of eggs	ij ounces.
Dry pepsin	ʒj.—iv drachm.

M. Sig. Inject as an enema, in small portions during the day.

—*M. Jaccoud.*

DIPHTHERIA.

Andeer recommends the application every hour or two, night and day, of the following:

℞

Resorcin	grain xlviij.
Glycerine	f℥i. M.

—

A spray of a five per cent. solution of the drug should be used in the room and the following administered internally:

℞

Resorcin	grain x.
Syrup terebinth	f℥i. M.

S. A teaspoonful every three or four hours.

—*Centralblatt f. d. Gesammte Therapie* H. 9, 1890.

MIGRAINE.

The following powder is recommended in *La Méd. Moderne* for migraine:

℞

Citrate of caffeine	1½ grain.
Phenacetin	2 grains.
Sugar of milk	4 grains. M.

To be repeated, if necessary, in two hours.

THE

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ISSUED EVERY SATURDAY.

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LEADING ARTICLE.

RETINOL: A NEW SOLVENT AND ANTISEPTIC.

In several recent communications, Dr. F. Vigier calls attention to retinol, which promises to be as valuable an addition to our pharmacopœa as vaseline. This substance was discovered by Pelletier and Walter in 1838, but remained without any special medicinal application until 1890, when Balzar used it successfully in the treatment of blennorrhagia and in syphilitic and varicose ulcers of the leg. His pupil, Barbier, continued his studies and made them a subject of an inaugural thesis.

Retinol is prepared by the destructive distillation of rosin by heating rosin in an iron retort. When rosin is thus acted upon four principal bodies come off—*retinpathe*, isomeric with toluene and benzoene, boiling 108° C; *retinyle*, isomeric with cumene, boiling at 150° C; *retinol*, which boils at 238° C; and *metanaphthaline*, isomeric with naphthaline boiling at 235° C.

Retinol has a formula of C_{35} H_{16}, a density of 0.900, and is of a brown or yellow color depending upon whether it is prepared from brown or yellow rosin. Both possess the same solvent and therapeutical properties, but the yellow preparation is preferable. Retinol is of an oily consistence, greasy, slightly bitter, of a slightly acid reaction due to traces of pinic acid; the odor is faint and peculiar, approaching that of the fir tree; and it burns with a fuliginous flame.

The solvent power of this substance is remarkable, and in addition to this it is unirritating, antiseptic and desicative, and exhibits no tendency to become rancid or in any way decompose. It is, therefore, singularly adapted for a large number of pharmaceutical purposes. Among the substances dissolved by it are: salol, 1–10; iodol, 1–50; naphthol, 1–50; aristol, 1–50; camphor, 1–20; chrysophanic acid, 1–40; cocaine, 1–30; codeine, 1–40, and strychnine, 1–40. It is mixable in all proportions with oil of juniper, carbolic acid, turpentine, alcohol and ether. Resorcin, if dissolved in glycerine, may be mixed with retinol, and so may iodoform if dissolved first in a little ether. Iodol is dissolved but soon precipitates as a resinous mass. Phosphorus is also dissolved and the solution remains unchanged indefinitely. Retinol mixes readily with fats, oils, vaseline, lard, lanoline, glycerine, cocoa-butter, etc., and is thus susceptible of use in the preparation of a vast number of ointments. In cases where a liquid is not undesirable, retinol, owing to its antiseptic properties, can with great advantage, replace these bodies. Preparations can be made in the form of ointments, solutions, capsules, etc. Vigier exhibited to the Société de Médecine Practique capsules of retinol-salol, retinol-creosote and pure retinol.

It has already afforded in therapeutics most satisfactory results, and in a large variety of diseases. Desarenes and Bar-

bier have experienced great satisfaction from its use in otology and rhinology, more particularly in purulent otitis, and to favor the expulsion of mucus and overcome the nauseous odor in atrophic rhinitis. In such cases it can be applied by injection, with a brush, or on a wad. In gonorrhœal vaginitis tampons soaked with retinol give very quick results, and a cure within 12 or 15 days. In gonorrhœa in man the injection of retinol gives immediate relief and acts on the discharge better and more rapidly than any other substance employed up to this time. In both affections it acts as an antiseptic and insulating body and is also valuable because it causes no pain and is well supported.

Phosphorated-retinol has been used with great satisfaction in the treatment of cases in which phosphorus was indicated. Vigier refers to over two hundred observations made by Kassowitz, in the treatment of rachitis and scrofula; and to cases of anæmia, chlorosis, dysmenorrhœa, uterine hæmorrhages, muscular paralysis, progressive locomotor ataxia, neuralgias, neuroses, hysteria, glaucoma and zona, treated by such men as Delpech, Curie, Guèneau de Mussy, Brocq and Duhring.

Retinol-salol has been used in urinary diseases; retinol-creosote in bronchitis, phthisis, etc.; and pure retinol in gonorrhœa. In opthalmology, Hubert has found it of great usefulness, especially in gonorrhœal conjunctivitis, and after injuries or operations. As illustrations of desirable combinations, the following are suggested:

℞ Retinol.....10 grams.
Lanoline..... 5 "
Bi-carbonate of Sodium..0.5 "

℞ Retinol.....10 grams.
White Wax..... 4 grams.
Cocoa-butter..... 6 grams.

℞ Retinol..... 8 grams.
Rosin..... 8 "
Lanoline..... 5 "

℞ Retinol, Rosin, Lanoline, } each... 5 grams.

The last is of very good consistency. To these formulæ may be added such other substances as may be indicated.

In diphtheria the following combination may be employed as a topical application:

℞ Retinol.....15 grams.
Naphthol..... 1 gram.
Camphor..... 2 grams.

In blennnorrhagia in man it may be employed as an injection, associated with resorcine in the proportion of 3 to 100, and it may also be administered in the form of capsules alone, or in combination with salol, etc.

In diseases of the skin, as psoriasis, the following prescriptions have been found to be good:

℞ Retinol.....20 grams.
Glycerole of starch..30 "

℞ Oil of cade, Retinol, } .....equal parts.

To stop itching this pomade is recommended:

℞ Naphthol B..... 5 grams.
Retinol .....50 "
Soft soap.....50 "
Prepared chalk.....10 "

In conclusion, the following may be considered the chief points of recommendation for this substance:

1. It possesses remarkable solvent powers; it is not altered by time or light; it is an excellent and permanent antiseptic; its local application does not give rise to pain or irritation; it is very cheap; and, finally, it unites by solution or simple mixture with a large number of the most important substances employed in therapeutics. These certainly are sufficient to justifiy the belief that retinol will soon render important and extensive service as an antiseptic excipient.

CORRESPONDENCE.

ELECTRICITY AND PELVIC SURGERY.

TO THE EDITOR:

Sir:—Dr. McMurtry's communication, in your issue of April 25, pleases me. The recent paper of Dr. Keith, of London, which is commanding the respectful attention of scientific men on both hemispheres, contains a most suitable answer to these objections, which, after all, are mere fragments of self-delusion.

If electricity in the diseases of women amounted to nothing, it would have been moribund long ago. If electricity was not

steadily gaining a strong following it would not be met with such enmity by laparotomists. If electricity had not already assumed a place as the greatest of all conservative measures in the treatment of pelvic disease, it would not evoke such hostility from those who fear that their own métier may cease to exist from the encroachments made upon it.

I reiterate, I have never seen a tumor anatomically cured, but I am only one out of many using electrical punctures. Dr. Keith cures them, so does Marsey—are the statements of these men to be sneered at by those who advance statistics of successful laparotomies and expect to be believed?

I have never seen a peritonitis result from a puncture, and I find that the records of such results in the practices of competent men are exceedingly rare. Competent men have no such results, and hence, I repeat, that all this furor about adhesions set up by electricity, is "foolish talk," quite on a par with the statement that "fibroids are caused by electricity." And yet this strange pathological story formed the subject of a strange address, not long ago, before an enlightened body of medical men.

It is proven as clearly as any surgical fact is proven:

1. That tumors have been anatomically cured.
2. That all painful and dangerous symptoms have been arrested.
3. That tumors have been greatly diminished in size.
4. That many cases of salpingitis have been permanently benefited.

The doctor stands on dangerous ground when citing ectopic pregnancy as a shibboleth of the laparotomist. The opinion of able men, surgeons, too, and big ones, is evenly divided as to the respective merits of electricity and the knife in the treatment of these cases. So I reiterate, what is found written in paragraph 2 of my letter, to which the doctor makes reply. The doctor has seen bad results following puncture—hence he condemns puncture.

I have seen deaths caused by laparotomy—so has Doctor McMurtry. Shall we, therefore, also condemn abdominal surgery? Dr. McMurtry says, "the operation of the removal of the uterine appendages arrests hæmorrhage and brings about atrophy of the tumor in less extreme cases, and has a mortality of only two-and-one-half per cent."

Electricity will do the same thing, without endangering life—hence the mortality becomes almost criminal.

Why cut a woman up, if you can accomplish the same result, possibly a better one, without this anatomical recreation?

Incompetent men will practice electricity and have bad results; incompetent surgeons make abdominal sections and have bad results—shall we say the fault is in the method?

HORATIO R. BIGELOW.
Philadelphia.

PERISCOPE.

THERAPEUTICS.

THE INTERNAL USE OF MERCURY IN BLENNORRHAGIC RHEUMATISM.

Morel Lavallée (*Le Progres Médical*, April 11, 1891) reports to the *Société Francaise de Dermatologie et de Syphiligraphie* two cases of blennorrhagia successfully treated by the internal administration of mercury. The first patient, suffering from blennorrhagic arthropathy was only relieved by ordinary treatment and by the medicinal waters of Aix. He was cured only after the concomitant syphilitic manifestations were combated by the action of protiodide of mercury administered in pill form. The second case was one of blennorrhagic rheumatism accompanied with muscular atrophy that had resisted all other treatment, but was entirely and rapidly cured by the internal use of mercury. The action of the drug in such cases must be determined by future researches.

The same author referred to a case of poisoning produced by the local application of salol. A patient, with an external otitis of syphilitic origin, introduced into the auditory meatus a large quantity of salol. On next day, *pari passu*, with the appearance of serious constitutional phenomena, a swelling of the auricle, accompanied with a violet hue and vesicles, was noticed, followed by an œdematous angina, resulting from a propagation through the Eustachian tube. The intense dyspnœa produced, was afterwards checked through the influence of emollients. Salol, though well borne by the digestive canal, is, on the contrary, badly tolerated when applied locally.

PATHOLOGY AND TREATMENT OF SYMPATHETIC OPHTHALMIA.

According to Abadie (*Le Progres Médical*, April 11, 1891) who has contributed a paper on the subject to the French Congress of Surgery, sympathetic ophthalmia is a dis-

ease of microbial origin. Following a traumatic injury the wounded eye becomes infected. From the borders of the wound the infection gradually gains entrance into the deep parts, invading the optic nerve, the chiasm and finally affecting the opposite eye. Under such circumstances, the external wound should be cauterized by means of a galvano-cautery, and an injection made into the vitreous of the diseased eye of one drop of a solution of corrosive sublimate (1 to 1,000). After a few days this injection should be repeated if necessary. By this means we are able not only to arrest the development of sympathetic opthalmia, but also to avoid the certain loss of the wounded eye. This treatment is especially applicable in the recent forms of sympathetic ophthalmia when the question of saving the primitively wounded eye should be taken into consideration. When, however, the ophthalmia is provoked by the existence of a painful stump, for example, then, the conservative treatment presents no advantages. In such cases enucleation constitutes the best treatment and should be preferred; and here, again, mercurial rubbings in large quantities and prolonged for a considerable time, should be associated with surgical interference.

HOW TO APPLY SERUM INJECTIONS IN THE TREATMENT OF TUBERCULAR PHTHISIS.

Héricourt and Richet have observed that the introduction of blood from an animal refractory to tuberculosis, as the dog, into the economy of one susceptible to the disease, tends to retard the development of the malady. Lépine (*Lyon Médical*, March 1, 1891) has further studied the subject, and from a series of experiments, especially as to the method of making the injections, has arrived at the following conclusions, which have been communicated to the *Soc. des Sciences Médicales de Lyon:* 1. The liquid could not be introduced into the peritoneum, owing to the difficulty of applying asepsis. 2. Other things being equal, injections of 2 or 3 kilogr. can be introduced. 3. The serum, and not the blood, was the substance injected as it is the serum which possesses germicidal powers. 4. The serum of goat's blood was employed in preference to that of the dog, as that was less offensive to the human blood-corpuscles. From 50 to 100 grammes, in divided doses, were injected hypodermatically every two days. This method was well borne by the patients.

ON SULPHATE OF ZINC IN DIPHTHERIA.

As an experiment, Dr. Kilmer added to a gargle (an ordinary tumblerful of water) about fifteen or twenty grains of sulphate of zinc. Upon my visit the next day, my surprise was great to find that about one-half of the membrane (diphtheritic) had disappeared from a boy's throat, while the diphtheritic membrane in his sister's throat had enlarged to about half an inch in diameter, and the throat in every way looked worse. There was no sulphate of zinc in the girl's gargle. The same treatment was continued another twenty-four hours, at the expiration of which time the exudate had entirely disappeared from the boy's mouth and throat, while in the girl's throat it had again at least doubled in quantity, and the general appearance of the throat was much worse. Believing then that the zinc sulphate was entitled to credit for the boy's rapidly improved condition, the girl was supplied with a gargle identical with that which the boy had been using, and twenty-four hours later not only had the diphtheritic membrane disappeared entirely, but all the swelling and distress had gone also, and both patients were now convalescent, and speedily recovered.—*Med. Record.*

DANGERS OF SULPHONAL.

Although sulphonal is probably one of the safest, as it is one of the most efficacious, among the hypnotics recently introduced, the series of cases published by Bresslauer of Vienna show clearly that it has certain dangers. The degree of peril is difficult to estimate, as the patients were lunatics, and were also apparently feeble; but the fact is significant that out of seventy-seven patients who were treated with the drug, no less than seven showed serious symptoms, and in five of these there was a fatal termination. It ought to be mentioned that the patients had been taking the drug for a considerable time in good doses, and had borne it well until symptoms of disturbance set in, these being great constipation, dark-brown urine, slow, or in some cases rapid but feeble pulse, discolored patches resembling purpura on the limbs, and great prostration. In the cases which ended fatally the cause of death was heart failure, with œdema of the lungs. —*Lancet.*

THE ACTION OF HYDRASTIN UPON THE VASCULAR SYSTEM AND THE UTERUS.

Authorities are divided upon the mode of the action of hydrastin on the vascular sys-

tem. Some have observed an increased blood-pressure and slowing of the heart's action, whilst others affirm that the drug paralyzes the vascular system. The uterine contractions provoked by hydrastin are due, according to some, to the direct stimulation of the muscles and of the cardiac nerves; according to others, to the stimulation of the central nervous system. It was for this reason that Serdsteff had undertaken new experimental researches upon frogs (sixty-two experiments) and upon warm-blooded animals (fifty-seven experiments). These are the results obtained by this experimenter:

Given in a small dose hydrastin provoked, in frogs and in warm-blooded animals, slowing of the heart's movements, owing to a stimulation of the inhibitory apparatus, both peripheral and central. Small doses always increased blood-pressure; by larger doses it was lowered.

These differences depended upon the state of the vasomotor centre. Small doses were not followed by convulsions, and did not paralyze either the respiration or the heart. He thinks, then, that if some observers have verified the paralyzing action of hydrastin upon the vascular system, it must be those who have given larger doses of the remedy. Regarding the influence exercised by hydrastin upon the uterus, the voluntary or rhythmic contractions of this organ would be increased in their strength, their number, and their duration.

Hydrastin does not act *directly* upon the neuro-muscular apparatus of the uterus, but *indirectly* by the intervention of the central nervous system, and that very probably by way of the vasomotors.

In sustaining these obtained results the experimenter counsels the use of hydrastin in all those cases of hæmorrhage where it would be, for one cause or another, unwise to await strong contractions of the uterine muscles, and where, it is of the greatest importance to attack the bleeding through the vessels of the uterus.—*Les Nouveaux Remedes.*

IODOFORM IN CHRONIC EYE CONDITIONS.

Dr. G. Walter Barr says: The use of iodoform as a dry antiseptic dressing has always had a tendency, in my hands, to produce exuberant granulations. This suggested the use of the same substance in cases where it is desired to stimulate cell-growth, and naturally some chronic conditions of the eye offered an attractive field for investigation.

It seemed evident that to attain antisepsis and the stimulating effect of the drug, seen in open wounds, it must be continually kept in contact with the part; this ruled out of the question the almost discarded use of iodoform pencils as rapid, repeated applications; the pure iodoform is much too irritating for use in the eye; and an ointment of proper strength best fulfils the conditions. The strength of the ointment should vary with the amount of stimulation desired and the susceptibility of the eye, for there is an individual factor of susceptibility which is far from constant. From 1 to 5 grains of iodoform to the ounce of vaseline has been found most often of greatest use. *En passant*, it is hard to find vaseline now which is free from some irritating substance (probably acid) left in it in the process of refining. This applies to unguentum petrolei, under whatever trade-marked name it is sold.

The first case in which I used the iodoform ointment was a girl aged 15, who had barely light perception in one eye and an anterior staphyloma in the other. There had been conjunctivitis from infancy, and the entire cornea was opaque in the eye which did not have the staphyloma. Before operating on the latter, it was highly desirable to get the best possible vision in the other eye. The ordinary practice had been exhausted, and a 4-grain iodoform ointment was placed in the eye three times a day. In a fortnight the vision was perceptibly improved, and in three months she could count fingers. This eye never got much better, perhaps partly due to a pathological condition of the optic nerve from a long disuse—from early infancy—although the cornea became gradually clearer. The staphyloma was operated upon, leaving a triangular piece of cornea, about 1.5 millimetres in dimensions on each side, and an iridectomy performed behind it. The corneal remnant at once became opaque in the process of healing; there was total blindness in the eye. A 4-grain iodoform ointment was applied twice a day, sufficient being placed on the everted upper lid to last until the next application. In three months the corneal remnant had so cleared up that she could recognize faces in her limited field of vision. I have never had any but the most gratifying results in treating pannus, however deeply the cornea is affected, by the use of iodoform ointment; the sight has not always been completely restored in the worst cases, but vision has been doubled or improved even more. The length of the period of treatment seems to be in direct ratio to the age of the pannus, but

several months are nearly always required in cases of long standing. The ointment should be applied often enough to keep the cornea constantly covered with it.

In trachoma, the efficacy of iodoform ointment depends on the amount of stimulation required and the strength of the ointment. By varying the strength of the ointment, it seems to me that greater nicety of effect can be obtained than in any other way. Trachoma of years' standing with large granulations, which are best adapted to the compression treatment, quickly succumbs to a 4-grain ointment, applied twice a day. In trachoma and chronic conjunctivitis the iodoform ointment may be used to advantage in conjunction with other treatment, where stimulation is not contra-indicated, by applying it at bed-time; the result is a cessation of the gummy or postulating condition of the lids in the morning.

In indolent ulcers, the results have been as encouraging as in pannus. Sometimes it has been necessary to touch the ulcer with cupric sulphate, but in two cases nothing but the ointment was necessary. In all the ulcer healed much more rapidly when the iodoform ointment was used, and usually without cicatricial cloudiness. Continued use of the ointment soon removed all marks of the ulcer and left the cornea perfectly clear.

The above is a generalization of the results in over a hundred cases of trachoma (mostly of very long standing), thirty cases of pannus, and a dozen cases of corneal ulcer. They seem to me to justify a further trial by others. The points to be remembered are, that much depends on a proper strength of ointment in each case, and that it is not adapted to acute conditions.

Regarding the *modus operandi*, those who are not confirmed microbe maniacs will attribute the action to the cell stimulation seen in the use of iodoform in chronic ulcers and like conditions. Of course, in trachoma and chronic conjunctivitis, something may be due to the antiseptic action of the iodoform, but hardly in pannus, or, perhaps, in corneal ulcer.—*Ther. Gaz.*

HYPERKINETIC ACTION OF CAFFEINE IN LARGE DOSES.

In the section of Pharmacology of the Tenth International Congress held at Berlin, Dr. Petreskn, of Bukaresh, made an interesting communication on the subject of the hyperkinetic action of caffeine in large doses. He prescribes the drug in the following formulæ:

℞ Caffeine.....1·0–2·0 gram.
Ag. melissæ.....140·0 "
Spiriti Vini
Syrupi simplicis....aa....30·0 "
M. Sig. One tablespoonful every half hour.

If necessary, this amount may again be taken within twenty-four hours. The formula for hypodermic injection of the drug used by Dr. Petreskn is as follows:

℞ Caffeine
Natr. Salic. vel benzoica...aa...0·25 gram.
Ag. destill.....1·0 "

The solution can be made with the aid of heat, and the whole amount should be used for one injection. In the majority of cases, the author prefers to give the drug by the mouth, never having observed any digestive disturbances to follow its use. Subcutaneous injections were only resorted to in extreme cases where an immediate action of the drug was desirable, and in which other injections were also called into use.

Petreskn classes caffeine among hyperkinetics of the greatest value for the nervous and muscular systems; it is also a stimulant to the vagus, and its action is allied to digitalis in this respect. He has used the drug successfully in typhoid fever, pneumonia, acute articular rheumatism, erysipelas, influenza, measles and several cardiac affections. His experience lead him to the following conclusions:

1. The therapeutic dose of caffeine is from 2 to 4 grammes daily, by the mouth, or 2 to 3 grammes subcutaneously in doses of 0.25 every two hours.

2. Given in these doses, caffeine is a powerful hyperkinetic both for the nervous and muscular systems. The effect of such a dosage shows itself in a strengthening of the cardiac contractions, together with a slight acceleration, the pulse becomes fuller, the arterial tension increases, the temperature decreases, diuresis increases, and the general feelings of the patients are greatly improved.

3. By means of its hyperkinetic action on the heart and vessels, caffeine becomes the most valuable substitute for digitalis. In certain cases caffeine is undoubtedly preferable to digitalis, and for two important reasons: first, its rapidity of action, especially when given hypodermically, and secondly, on account of the absence of accumulative effects, which permits of its continued use for a long period.

4. Caffeine is invaluable in the treatment of primary or consecutive heart failure. It is also valuable in nervous prostration or in congestive conditions in which the nerve

centres are affected, and which are caused by disease or intoxication.

5. The diuretic action peculiar to caffeine, makes it valuable in the dropsies incident to heart failure, as well as those of a purely renal origin.—*Wiener Med. Presse.*

THE TREATMENT OF PULMONARY TUBERCULOSIS BY HYPODERMIC INJECTIONS OF IODOFORM.

Gavoy, in the *Gazette Médicale de Paris*, details his method of treating pulmonary tuberculosis with iodoform. Morning and night, a hypodermic injection of 30 minims of the solution, of 1 part to 100 of iodoform in oil of sweet almond, is given.

No febrile reaction occurs, and the results are very good. The cough diminishes rapidly, and the characteristic muco-purulent catarrh first becomes more liquid and then ceases. The character of the voice is also improved, and the lungs become more permeable to the air. Inspiration is increased in depth, and the râles become more moist. Other symptoms showing the favorable influence of this treatment are a decrease in the night-sweats and a renewal of the appetite. The therapeutic influence of iodoform over carious bone and pus-corpuscles seems to point to the fact that it exercises an analogous action upon tubercular processes accompanied by resolution and necrosis of the lung.—*Med. News.*

TREATMENT OF MALARIAL HÆMATURIA.

Dr. B. W. Mason has treated five cases of malarial hæmaturia, two of these cases were very bad, one died, the other three cases were seen early and all recovered.

One patient was a girl nine years old, who had been having chills for more than a year. Skin very yellow, pulse 135, temperature 102, bowels had been moved by a dose of salts, the bladder acting every hour or two, passing dark blood. The child complained of pain in head, back and bones of lower extremities. She was vomiting almost incessantly, and the dyspnœa was so great that she had to be raised to a sitting posture and fanned frequently; this was, to him, an alarming symptom. He at once put her upon one grain doses of calomel every two hours until the bowels were acted upon; for the nausea gave Horsford's acid phosphate, which acted nicely. He gave tincture of iron three drops, Fowler's solution one drop every two hours, and spirits turpentine four drops every two hours. This treatment was commenced Tuesday at 11 o'clock A. M. At 8 o'clock P. M., the urine began to look more natural, the skin to clear up, the nausea to subside. The last trace of blood in the urine disappeared at 9 o'clock A. M. Wednesday. Not a trace was to be discovered in discharge from the bladder two hours later. The patient began to improve and was discharged on Saturday, so far recovered as to sit up a little. He left a tonic for her and she made a quick and nice recovery. He thinks the iron and arsenic treatment will do.—*Atlanta Med. and Surg. Jour.*

TREATMENT OF BRIGHT'S DISEASE.

The *Rev. de Clin. et Therap.* publishes the following methods for the treatment of Bright's disease:

(1.) *Classic Method.*—The climateric prescription consisted in the avoidance of dampness and sudden changes of temperature. As to diet, rich or irritant articles of food were avoided, as were also eggs. A pure or mixed milk regime was followed, and such articles as wine, whiskey, liquors and beer were entirely prohibited.

(2.) *Senator's Method.*—All white meats and pork are allowed, and the use of vegetables and starchy articles of food, fruits, fats and milk advised. Senator also recommends the employment of wine mixed with water.

(3.) *Semmola's Method.*—The author observes the preceding treatment and besides advises the employment of the following solution to be given in the course of twenty-four hours:

Iodide of potassium	15 grains.
Phosphate of sodium	30 grains.
Chloride of sodium	75 to 90 grains.
Water	20 ounces.

(4.) *Bamberger's Method.*—Besides a milk diet, tonics and ferruginous remedies are employed. The author highly recommends the following preparations: (1) Pills of perchloride of iron. Of these pills three to six are given per day. Each one contains:

Perchloride of iron	½ of a grain.
Pulverized menyanthe (Buckbean)	¼ of a grain.
Extract of gentian, a sufficient quantity.	

—*Univ. Med. Mag.*

MEDICINE.

SOME REASONS IN FAVOR OF THE NON-SPECIFIC PROPERTIES OF GONOCOCCUS.

Erand, of Lyon (*Le Progrès Médical*, April 11, 1891) gives some reasons to sus-

tain the non-specific properties of gonococcus. According to the author, there exists in the normal urethra, a diplococcus, which, under the influence of coloring materials, behaves like the so-called gonococcus. Both secrete a diastase, which, injected into the cellular tissue, produces no deleterious effects; but which, introduced into the testicle of an animal, gives rise to orchitis, to a suppuration of the vaginal sac, followed by atrophy of the testicle. The interference of microbes is not absolutely necessary for the production of the suppuration. From a number of experiments performed, to determine this point of specificity in regard to gonococcus, Erand concludes that it is the ground, so to speak, and not a special property, upon which the virulence of the so-called gonorrhœal germ depends.

ALBUMINURIA IN BLENNORRHAGIA.

In a communication upon this subject, presented to the *Société Fran. de Derm. et de Syphil.*, Balzer (*Le Progrès Médical*, April 11, 1891) has sustained that in acute blennorrhagia, whether simple or complicated with cystitis or orchitis, the co-existence of albuminuria is frequent, generally in the proportion of 12 per cent., although this may be caused also by previously existing complications. This albuminuria may assume an intermittent type, and only lasts a few days. In such condition, the balsamic medication seems to exercise an unfavorable action. It is possible that many of these cases of albuminuria may be due to the existence of venal lesions, but they also form a part of infectious processes. It is, therefore, of the utmost importance to examine the urine for albuminuria in all cases of blennorrhagia.

THE ASSOCIATION OF SYDENHAM'S CHOREA AND RYTHMICAL CHOREA IN A HISTORICAL FEMALE.

J. Seglas (*Le Bulletin Médical*, April 12, 1891) reports to the *Société Médicale de Paris*, the case of a young girl, who, at fifteen years of age, suffered the first stroke of Sydenham's chorea. At nineteen she had a second attack of the same malady. The disorderly movements were general, but most prominent on the left side of the body. On this side the sensibility was diminished, as shown by simple contact and even pricking; the same thing was noticed with regard to muscular sense. There was a slight ovarian hypersthesia, but no symptoms of previous rheumatic nature were observed. The heart was apparently intact. Two months afterwards, the choreic movements, greatly improved, were scarcely noticeable on the left arm. It was noticed at the time that these movements had changed in character: they were no longer inco-ordinate but had assumed a small rythmical amplitude, so to speak. Eight days later, these movements of the left arm exhibited the type of a malleatory chorea. In the intervals, the patient suffered from nerve crisis, such as left hemianasthesia, ovarian hypersthesia and a possibility of being hypnotized.

To sum up, this patient was laboring under Sydenham's chorea, accompanied with some hysterical symptoms. Afterwards this chorea was replaced by the rythmical form, the hysteria becoming, at the same time, pronounced. The author does not believe that in this case we had to deal with two diseases, but only with one affection, the hysteria having assumed, successively, the two different types of the original disease, that is, that of Sydenham's and that of the rythmical chorea.

EFFECTS OF TUBERCULIN ON MONKEYS.

M. Henocque (*Rev. de Thér. Méd Chir.*, March 15, 1891) has recently tried the effect of tuberculin in a monkey which presented no symptoms of pulmonary phthisis. Two days after the first injection the animal, which had exhibited the characteristic reaction, presented dullness and a few râles at the right apex. After the third injection the dullness was more marked on the right side, and began to be perceptible at the left apex. Soon all the symptoms of acute phthisis manifested themselves with intense fever, the animal dying ten days after the last injection after losing a tenth of its weight during that time. The total amount used was 6 milligrammes of the diluted fluid. On post-mortem examination, four tuberculous nodules of the size of a pea were found in the right lung, and caseous pneumonia involving two-thirds of the organ in the left. In both cases the tuberculous lesions were surrounded by a zone of very intense red hepatisation. Pieces of the caseous tissues were injected into two guinea-pigs, in one after mixture with sterilized water, in the other with diluted tuberculin. Both animals showed signs of cutaneous and glandular tuberculosis.—*Brit. Med. Jour.*

Grass juice, and bottles of electricity, are the agents which a Paris quack announces as a certain cure for tuberculosis.—*Exchange.*

CONTRIBUTION TO THE STUDY OF HYSTERICAL BLUE ŒDEMA.

Dr. Emile Boix (*Nouvelle Icon. Salpetriére*) recently reported a case of this nature, which is of much interest:

L. G., aged 35, cook, Dec. 13, 1890. Headache, but no alcoholism in family. The patient had *incontinence of urine in bed until he was* 14 *years old;* had rheumatism when in the army and twice erysipelas of the face. This was his fourth attack of blue œdema.

The patient is a blonde with blue eyes, and a feminine expression. He says that his natural disposition is very lively, but that his present trouble has made him melancholy.

Sensibility to the brush completely lost on the right side; sensibility to pain and heat very much diminished. The anæsthetic zone was more marked at the level of the right scapula.

There was a concentric retraction of the visual field on both sides, more marked in the right eye. Right, 55° on the outside, 40° on the nasal side; a second examination gave us 40° on the outside; the left eye is 70° on the outside and normal on the nasal side.

The first thing observed was the exaggerated œdema of the patient's right hand. It has the aspect of a total phlegmon of the hand. The œdema occupies the whole hand, but especially the dorsal aspect which is enormous. The coloration of the hand is habitually violaceous with deeply colored places and others whiter; it has the appearance of marble. The cyanosis is much more marked towards the end of the fingers, but it varies very much in the course of the day, without apparent regularity in its variations, and without being altered by external influences; the hand becoming dark-red with places more or less light, and cyanotic points; at other times very pale, at others entirely cyanotic; at other times it is rosy. The position of the hand makes no difference either in the œdema or in the coloration.

The tumor was hard, but the finger made some depression, from which the swelling recovered with great rapidity, the depressed point being white and the coloration, violet or red, being deepened after removal of the pressure.

The affected (right hand) was colder than the sound hand, the difference in temperature varying greatly. On Dec. 13, at night, the temperature of the affected hand was 64° F., that of the sound hand being 81° F. at the same time. On the afternoon, however, of the same day, the conditions varied, the affected hand having registered 94° F. and the sound hand 76° F. This elevation of temperature was not accompanied with any special redness. This elevation was but for a short time; an hour after we find the right hand colder than the other. The patient called this *a stroke of madness in his hand.*

The anæsthesia in the right hand was absolute for all methods, even deep sensibility was abolished. This anæsthesia was arrested at the wrist-band. The prick of a pin on the œdematous part produced a small drop of black blood, but the flow did not persist.

The arm-pit was the seat of an exaggerated secretion of sweat; in a few hours the night shirt of the patient on that side would be soaking to the waist.

If we analyze the stigmata presented by L. we cannot have any doubt as to the existence of hysteria in man; the narrowing of the visual field and the ease with which hypnotism can be produced show this.

In conclusion: the chief singularity we observe was in the temperature of the patient's right hand; an extreme variation, compared with the left hand, of 16.4° (29.5° F.). It is true that this variation was not produced at once under our eyes, but we have had the man at our disposition only three days. We intended to employ various measures—such as the electric current, etc., for the cure of our patient, and we did, in fact, hypnotize him, hoping to get some effect from suggestion. The next day, however, L. insisted upon leaving the hospital at once and would give no reason for his departure.

We believe he was afraid that his œdema would disappear—for we had given him assurance that we were perfectly able to cure him—and he would be deprived of an infirmity which rendered his entrance to a hospital easy.

Two days after the above disappearance he entered the Pitié, and we find, also, that he has been in the Charité.

It is possible that L. can make his œdema appear at will, as a patient of M. Féréol can, who produces when he pleases various imitations of diseases of the skin, such as scarlatina, variola, etc., which mislead the physicians.

L. did not stay long at the Pitiè, he did not think they showed enough solicitude for his case there; and *that* is worth something as a hysteric note.

PATHOGENY OF DIABETES.

BOUCHARD has stated that there are no fewer than twenty-seven theories of the cause of diabetes. None are entirely satisfactory. The most important fact discovered in recent years is that diabetes follows extirpation of the pancreas in animals (V. Mering and Minkowski), and numerous clinical observers have since then noted pancreatic disease in conjunction with glycosuria. V. Mering and Minkowski, with most praiseworthy scientific reserve, have abstained from formulating any theory to explain the undoubted fact they have put upon record, and Lépine (*Rev. Scientifique*, February 28, 1891) has discovered an additional fact in relation to pancreatic extirpation and diabetes, which must be taken into account when the true explanation of these phenomena is forthcoming. Healthy blood possesses what he terms glycolytic powers. Fresh blood contains a certain percentage of sugar; if the same blood be allowed to stand at the body temperature for an hour before it is examined, a very considerable portion (20 to 40 per cent.) of this sugar has disappeared. This number (20 to 40) may be taken as the glycolytic power of healthy blood. It is considered that this sugar-destroying power is due to a ferment present in the corpuscles, but especially in the white corpuscles, as the glycolytic power of the chyle is as great as that of the blood, and the portions of the blood richest in leucocytes are richest in the ferment, which may be dissolved out from them by salt solution. In cases of diabetes the clycolytic power of the blood falls to 5, 2, or even 1. In animals without a pancreas there is a similar drop. The pancreas thus appears to be the chief source of the ferment. Lépine believes that the activity of a pancreatic cell is bipolar; by its internal extremity it pours the pancreatic juice into the ducts of the organ, and by its basal extremity it pours into the venous blood and lymph the glycolytic ferment. The absence of diminution of the sugar-destroying power of the blood dependent on pancreatic extirpation or disease is thus a factor, and perhaps an important one, in the causation of an over-abundance of sugar in the blood, and will certainly have to be reckoned with before the true pathogeny of diabetes is understood.—*Brit. Med. Jour.*

Dr. Cains, some four hundred years ago, when an old man, tried to regain his youth by sucking the breast of a woman.

SURGERY.

MICROCIDINE: A NEW ANTISEPTIC.

In representing Berlioz, of Grenoble, Polaillon has presented to the *Académie de Médecine* (*Journal de Médicine de Paris*, April 12, 1891) an experimental and clinical study of the new antiseptic: *Microcidine*. Berlioz believes that all the known antiseptics possess more or less disagreeable properties, and cannot be manipulated carefully enough, owing to their insufficient solubility in water; they are such as the salts of mercury, phenol, naphtol, thymol, salicylic acid and boric acid.

He has thus found, from a research upon the subject, a new medicament which, while it possesses feeble toxic properties, is a true caustic, perfectly soluble in water and has no odor or taste. Such a drug is microcidine, a combination of naphtol and soda.

It destroys the staphylococcus albus and the microbes of anthrax in solutions of 0·20 grammes per 1000; it acts similarly on the bacilli of Eberth and the baccillus coli-communis in the strength of 0·25 grammes per 1000. It also kills in the course of *one minute*, in solutions of 5 grammes per 1000, the microbes of saliva, of the pus of osteomyelitis and of puerperal septicæmia. Its antiseptic power is ten times greater than that of phenol, and twenty-eight that of boric acid.

Its minimum fatal dose for rabbits and guinea-pigs, is 0·164 grammes administered intravenously and 0·35 grammes by hypodermatic injection, per kilogramme of the body-weight. It is, therefore, less toxic than naphtol itself.

The solubility of microcidine in water is very pronounced; one gramme of it is readily dissolved in three cubic centimetres of water. In ordinary therapeutics, and even in very large doses, microcidine does not exercise a powerful caustic effect; it does not irritate wounds, and as, on the other hand, it has no odor, it may be employed for toilet purposes. Neither has it any deleterious action on surgical instruments or on clothing.

Microcidine lowers rapidly in animals both normal and febrile temperatures, and is eliminated by the kidneys, rendering the urine non-putrefactive.

Microcidine has been employed with success in a large number of infected and surgical wounds. It may be used in solutions varying from 5 to 3 parts per 1000.

THE TREATMENT OF SYPHILIS.

The following is the therapeutic method which I ordinarily employ in the treatment of syphilis:

As I have already stated, I do not generally give mercury until the onset of the secondary symptoms, although I have carefully used the mild mercurial preparations in the local treatment of the primary lesion.

According to the intensity of the phenomena observed, I prescribe to the patient daily mercurial rubbings, in doses varying from two to four grammes (30 to 60 grains) for a period of fifteen days; then I allow the patient to rest from two to three weeks, according to the case, and I continue in this manner during the first ten months.

In the course of the periods of treatment and similarly during the intervals, I am careful as regards the local treatment of syphilides by means of the mild preparations of mercury. For cutaneous syphilides, I employ the drug in the form of ointments, solutions or lotions.

In certain forms of rebellious cutaneous syphilides, I advise general baths, in each of which may be put seven grammes (105 grains) of corrosive sublimate. It will be unnecessary for me to say that I particularly insist in the observance of mouth hygiene, on cleanliness, general hygienic measures, and that I always endeavor to build up, as much as possible, the system of my patient. In well-to-do cases, I advise a sojourn in the country or by the sea-shore.

At the end of from six to ten months, I do not prescribe the mercurial frictions for a longer period than ten days, and I then advise my patient an interval of repose varying from three to six weeks or even two months, according to the case. This method of treatment is followed to the end of the first and during the second year of the disease.

I am in the habit of administering sudorifics, purgatives and out-door exercise, in order to make the mercury, as it were, circulate through the economy and thus avoid cumulative effects. In exceptional cases, where the patient suffers from persisting headaches or pains in the bones (osteocoes), and where the symptoms do not yield to mercurial medication, I prescribe for the time being, from two to three grammes (30 to 45 grains) of iodide of potassium in combination with from fifty decigrammes to one gramme (7½ to 15 grains) of bromide of potassium.

From the end of the second year my treatment varies greatly, according to the case. If after a certain time the individual is free from syphilitic troubles, I observe the custom of ordering every three months, and during a period of ten days, rubbings of mercurial ointment two to three grammes (30 to 45 grains), and for a few weeks after the inunctions, I administer two to three grammes of potassium iodide, generally after the principal meal, or at night in a glass of milk.

I need not say that when syphilitic phenomena have manifested themselves, I have resorted to a treatment sufficiently adequate to combat the severity and duration of the accidents observed. If at the beginning of the third or fourth year, my patient remains free from all syphilitic manifestations for more than a year, I am in the habit, by way of precaution, of prescribing twice a year, that is, in the spring and fall, mercurial rubbings for a period of ten days. One month after this operation, I order my patient to take, for a space of three weeks, iodide of potassium in thirty grain (two gramme) doses.

If he comes to me after the fourth year, having apparently, for a long time, escaped from syphilitic phenomena, I recommend, by way of precaution, a continuance of the same method of treatment; but if there is the least suspicion of any syphilitic phenomena, I advise him to consult a specialist.

In a general way I try to avoid, as far as possible, the pushing of the treatment by mercury and potassium iodide, the effects of which I have reason to fear. I have many times seen alterations of the economy following the abuse of these therapeutic agents, and, as a consequence, serious neurasthenic phenomena.

I have, likewise, often observed that these neurasthenic symptoms, with or without the presence of dilatation of the stomach, have been mistaken for phenomena of cerebral or cerebro-spinal syphilis. I have also noticed that the continuance of this mercurial and iodated treatment, which has been the very cause of these nervous troubles, has gradually increased the severity of these. Serious consideration of the subject, at such moments, has led me to make the following observations: An individual contracts syphilis. He consults a syphilographer and is by this well treated. Vexation, excesses, bad hygiene, the abuse of mercurial and iodated preparations, all contribute to produce in the patient the neurasthenic symptoms referred to, chief among which are headache, vertigo, change in the individual's character, and disordered memory. Under such circumstances the

physician is liable to diagnose the case as one of cerebral syphilis. Once made, this diagnosis is followed by a simple and natural consequence. The specific treatment has been insufficient, and, therefore, it is further pushed. In spite, however, of this measure, the nervous phenomena do not diminish; on the contrary, they are increased. The patient again consults his physician and this, in turn, increases the doses of the remedies. Thus, the undue persistance of the specific medication renders worse the neurasthenic condition, a condition which has been produced, in many cases, by the abuse of such a treatment, an error of diagnosis, and by the non-observance of the common rules of hygiene.

I have at length treated of the danger resulting from the abuse of the specific treatment, and of the diagnosis of neurasthenia which is frequently mistaken for cerebral syphilis, chiefly because I am now authorized to say that I myself have, at some time, labored under the same errors.

I have afterwards made up for my faults in many instances where I have entirely subdued neurasthenic phenomena by the simple suppression of a specific treatment instituted for a pretended cerebral syphilis.

Such are the principles which have guided me.

I will conclude by saying that I do not prescribe the internal administration of mercury when I can use this remedy otherwise, as that method, as has been shown by Jullien, is more apt to produce digestive, and hence, neurasthenic, disorders, than the external application of the remedy.

I employ the drug internally in those cases where, owing to various causes, the rubbings are repulsive; in those, where it is advisable to keep secret the ingestion of the drug, as, for example, married women; in those that owing to an irritable skin, can not tolerate the local applications (generally this inconvenience can be avoided by employing mercurial ointment newly prepared with fresh benzoated lard, cleansing the part twelve hours after the application, afterwards washing and powdering it); in those where it is absolutely necessary to conceal the treatment. and finally in those cases that, like commercial travellers for example, will not submit themselves to the local use of the drug.

In regard to the hypodermatic injections of the soluble or insoluble salts, I only employ them in hospital practice, especially in the case of public women, since these, as a general rule, do not take the medicament in other forms prescribed.—Prof. H. Leloir, in *Journal de Médecine de Paris.*

ZINC PASTE AS A DRESSING.

Drs. Cordua and Glum have experimented with Unna's modified zinc pastes as a surgical dressing (the thicker paste consists of zinc oxide 10 parts, gelatine, glycerine and water each 30 parts, and the thinner one, of zinc oxide 10 parts, gelatine 20 parts, glycerine 30 parts, and water 40 parts). They found this application especially useful in the treatment of granulating cavities and wounds. After the skin has been disinfected with a 1 to 2,000 sublimate solution and dried, the paste, which has been warmed over a water-bath, is applied in a broad streak around the wound at a distance of 1 to 2 centimeters from the margins, with a thick brush, and then a thick layer of iodoform gauze is pressed with moderate firmness upon the wound surface and the surrounding area covered by the paste. According to the situation of the wound, the layer of gauze and surrounding skin may be brushed with the thin zinc paste, and thus made to adhere firmly, or the dressing may be secured by one or two turns of a bandage, and the paste applied over both. Immediately after, and before the paste has become dry, its surface is lightly covered with cotton, which will thus prevent adherence of the clothing. In this way a perfectly fixed dressing is obtained, which has proved especially useful on the neck, chest, shoulders, hips, the upper third of the arm and thigh, where dressings are usually retained with difficulty. In cases of ulcers of the leg, after disinfection, the sore is covered with iodoform gauze, and the leg enveloped firmly in a mull bandage, over which is applied a layer of paste and then another bandage. This dressing may be left in place for eight or more days. If applied to hairy parts of the body the hairs must be shaved off for a wide distance around the wound.—*Wiener Medizin Presse,* 1 and 2, 1891.

ACETANILID FOR CHANCRE AND CHANCROID.

The *Journal de Médecine,* January 25, 1891, states that Basilevitch reports in *Nouveaux Remedes,* November, 1890, that cicatrization took place in a short time as a result of sprinkling acetanilid on the surface of the ulcers in one case of chancre in a woman and in two cases of chancroid in men.

In these cases acetanilid has the advantage over iodoform of being inodorous, and that large doses do not give rise to toxic manifestations. It is also less expensive than iodoform—an important consideration, especially in dispensary practice.

GYNÆCOLOGY.

SUBCUTANEOUS INJECTIONS OF ETHER IN PUERPERAL ECLAMPSIA.

An interesting supplement to the treatment of puerperal eclampsia, is offered by Dr. Perron, and quoted in the *Wiener Medicinische Wachenschrift*, April 12, 1891. The case recorded was that of primipara, twenty years old, who was seized with eclamptic convulsions two hours after delivery. Chloral in liberal doses, blood-letting, and even inhalations of chloroform, had been tried without avail. The convulsions, which had begun at eight in the morning, continued with unabating severity to return every half hour until noon and then became almost unremitting. The patient lay convulsed with severe dyspnœa and deeply cyanosed, her breathing was labored and stertorous, and death was momentarily expected. Dr. Perrin then injected subcutaneously a syringeful of ether, and in a few minutes the respirations became more regular and less labored. Fifteen minutes later, another similar injection was made, and a third injection two hours later. After the second injection the convulsions ceased entirely, and the patient made a speedy recovery. It is to be noted that no albumen was found in the urine.

PORRO'S OPERATION: PUERPERAL HYSTERECTOMY.

Dr. Joseph Price, in the *Annals of Gynæology*, calls attention to the present success in supra-vaginal extra-peritoneal hysterectomy for fibroids which has greatly confirmed our confidence in the Porro operation over the Cæsarean.

The present low mortality has induced many operators to do the Porra—a complete and perfect operation and a wise practice—as it saves the patient from the risk of a subsequent section, taking away from the Cæsarean section the most important factor in its dangers—the succulent uterus with its incision.

In his discussions on supra-vaginal hysterectomy, he has endeavored to show that an uncomplicated operation of this sort, with the extra-peritoneal treatment of the stump, is, under the improved technique, an operation of comparatively little danger. He had no deaths from this procedure in his last forty consecutive cases, including two Porros. The operation, in the hands of all trained men, accords with my experience.

The complications of hysterectomy, when no important viscus is involved and the adhesions are simple, are not to be feared. In the Cæsarean section the danger of hæmorrhage is ever present; in the Porro operation the uterus is strangulated at once, thus obviating this complication. The Porro operation clearly has the advantage in these essential points: first, in absence of danger of hæmorrhage from uterine incision; second, in the extra-peritoneal treatment of the cut uterus; third, in the greater rapidity of operation. The results in the Porro operation should surpass those of ordinary hysterectomy for the following reasons: first, there are very rarely adhesions unless electricity has been used; second, there is no implication of any important viscus, and, accordingly, less hæmorrhage; third, less shock. In the Cæsarean section the suturing of the uterus greatly prolongs the operation, making a time consideration that is one of the most important in abdominal surgery. The factors of uncertainty in the healing of the uterine incision put our established ideas of exact surgery at sea; it is impossible to put it at rest. The uterine tissue is not stable, but is undergoing metamorphoses and degeneration; in no other part of the body do we find such a condition, creating such dangers of leakage and consequent peritonitis. This is all done away with in the extra-peritoneal treatment of the succulent stump; here the use of the serre-nœud is the ideal treatment, as it can be contracted upon the shrinking stump and hæmorrhage absolutely controlled.

Considering the sociological side of the question: Have we a right to sterilize a woman? We have not, if she is simply a propagating organism. If we take a higher view, she has the right to the best she can attain to, physically as well as mentally and morally. We should not leave her in jeopardy from a future peril. Again, the children from this class of women—deformed, rachitic, illy developed—often die young, and are at best but illy fitted for the battles of life.

Nearly one-third of the inmates of the New York hospitals are well able to pay for medical attendance.—*Ex.*

OBSTETRICS.

APPARENT GROWTH OF THE PLACENTA AFTER LABOR.

Dr. W. P. Chunn related to the Gyn. and Obs. Soc. of Balt., an instance of a patient who was twenty-eight years old, and had been married five years. She had had no children at full term, but had had three miscarriages. The first and second miscarriages occurred at about the fourth month of gestation. The last miscarriage occurred about May 10th, 1890. She had missed one period, and believed herself to be about six weeks pregnant. On the 10th of May she began to have bearing down pains and hæmorrhage with the expulsion of blood clots, lasting some three or four days. Then the pains subsided, the hæmorrhage ceased and I regarded the uterus as empty. On the 12th of June, however, she was again seized with violent pains, and during the night was delivered of a placental mass larger than a man's fist, which I saw the next morning; the patient, as well as myself, was surprised. The fœtus was searched for but no sign of it found.

THE POLYURIA OF PREGNANCY.

Dr. Voituriez (*Arch. de Tocol.*, December, 1890) concludes, after a study of this subject, that, in the course of gestation, polyuria of a type entirely confined to pregnancy is sometimes observed. In such cases the urine is clear, slightly acid, and of normal composition, excepting that the proportion of water is greatly increased, so that the specific gravity is low. Sugar and albumen are alike absent, and no cystitis is present in cases of this affection. Polyuria of pregnancy is probably more common than is generally believed. The only way of authenticating a case is carefully to collect all the urine passed every twenty-four hours. The disorder is not usually detected until the middle of the pregnancy. It rapidly disappears after delivery. In nature it is exceedingly mild, and it appears to endanger neither the mother nor the child. Dr. Voituriez describes a case where a pregnant woman was compelled to make water over twenty-four times in twenty-four hours, passing over seven pints of urine daily. She suffered from slight thirst. Yet she was safely delivered of a living (first) child, which weighed nine pounds. Tarnier's forceps had to be used. Directly after delivery polyuria ceased and never recurred. The secretion of milk was normal. Bromides and belladonna had been administered, but proved useless.—*Albany Med. Ann.*

PÆDIATRICS.

SALICYLIC ACID FOR THE PREVENTION OF SCARLET FEVER.

Sticker reports the observations of G. de Rosa, who administered salicylic acid, in doses of one to five grains daily, to sixty-six children exposed to infection during an epidemic of scarlet fever. Twenty-seven cases of the disease existed in the building, when administration of the drug was commenced. Only three of the sixty-six contracted the disease, the failure in these being ascribed to a longer exposure to infection.—*Centralblatt für klin. Med.*

ANTIPYRETICS IN CHILDHOOD.

Demme (abstract in *Therapeutische Monatshefte*, Feb., 1891) believes that a moderate elevation of temperature of a few days' duration is best treated without any antipyretic drug. When, however, a temperature of 104° F. is reached and maintained, these drugs are of decided importance, as in typhoid fever, rheumatism and broncho-pneumonia. In diphtheria, the acute exanthems and croupous pneumonia, on the other hand, they are to be avoided.

Salicylate of soda he employs in rheumatism, in daily doses of 7½ to 45 grains for children of between 2 and 15 years; and salol in about the same doses. He recommends thallin sulphate in typhoid fever in doses of ¼ to ¾ grains for children from 3 to 15 years; antipyrine in the first stage of broncho-pneumonia in several hourly doses of three to fifteen grains; in later stages of the same disease quinine in equal doses. Acetanilide is efficient in the high temperatures of pulmonary tuberculosis, one to three times daily, in doses of ¾ to 4½ grains. Phenacetin, he thinks, is best given in several full doses, such as 1½ to 7½ grains, according to age.—*Univ. Med. Mag.*

TREATMENT OF CONVULSIONS IN CHILDREN.

T. G. Davis recommends, if the patient is cyanotic, a few whiffs of amyl-nitrite, followed by inhalations of chloroform and hypodermic injection of tincture veratrum viride—one-half drop for each year up to six years.

HYGIENE.

A RETROSPECT OF THE SUCCESSIVE EPIDEMICS OF CHOLERA IN EUROPE AND AMERICA FROM 1830 TO 1890.

Dr. WILLOUGHBY, in a paper before the Epidem. Soc., after alluding to the doctrine of epidemic influences, telluric and atmospheric conditions, and other unknown agencies as at one baseless and needless, and to the opposite delusion, prevalent in the south of Europe, of its being infectious in the same sense as small-pox, asserted that all the independent and scientific students of the subject in Europe and America were now agreed that the vehicle of contagion was contained in the evacuations, that it was thus carried by fomites as soiled clothing, etc., while persons suffering from the disease, even in unrecognized and mild forms, infected the soil and water of places through which they passed. Insanitary conditions favored its development, but the most insanitary towns—as Rome, Seville, and others—had escaped, since they had been provided with pure water supplies. The incubation period he believed to be as a rule from one to two days, four being an ample limit for quarantine purposes. Its transportability and conveyance wholly and solely by human intercourse was proved not only by the progress of every epidemic having followed the great routes of trade and pilgrimages, but by the rapidity of this progress having corresponded to the facilities for travel, whether by caravans, river boats, railways, or ocean steamers, quoting in this connection Dr. de Renzy and others as to the altered corcumstances of travel in Northern India; and he thus explained the immunity of Australia and Chili, virtually the most isolated communities in the civilized world. It was, he said, in 1821 that cholera, so far as was known, first advanced from India westward, reaching Astrakhan in 1823, but subsiding until 1827, when a fresh wave swept over Persia, entering Russia in 1829. In 1830–31 it was fomented by the war in Poland; in 1831–32 it spread over the whole of Europe; and in 1832–33 over North America, lingering in each continent for about two years longer. It was remarkable, and totally inconsistent with the theory of conveyance by winds, that, though some cases had occurred on board ships in the Medway as early as July, 1831, it did not reach London till February, 1832, having effected a landing at Sunderland and travelled *via* Newcastle, Edinburgh, Glasgow, Belfast, Dublin, and Cork, whence it was at length brought to London. A wave rolled over Persia, Arabia, and Syria between 1836 and 1839, but retired again. In 1840 it entered China, then passed westward through Central Asia, re-entering India from Afghanistan and through North Persia, reaching the Caspian and Black Seas in the summer of 1847. Following the military road then in course of construction from the Caucasus to Moscow and the river highway of the Volga, it was intensified and spread by the fair at Nijni Novgorod and the massing of the Russian, Austrian and insurgent Hungarian armies on the Danube, and in the course of 1848–49 had attacked every country in Europe except Denmark and Greece, which were saved by stringent quarantine. It extended to America in 1849, but died out in the course of the following year. The epidemic of 1854 was not strictly a separate invasion, but rather a resuscitation of the last, which had lingered in the south and east of Europe and the west of Asia until called into fresh activity by the Crimean war. Every country in Europe and America was again invaded. The incidents of the outbreaks in America threw great light on the conveyance of the disease by fomites. The epidemic of 1865-66, which was the first to come wholly by the Red Sea, spread rapidly over Europe and America; but had scarcely subsided when a fresh explosion occurred at the Hurdwar fair in India in 1867, whence it was carried to Persia and Russia, being reintensified *en route* by the pilgrimage at Great Mesched in 1868 and the fairs at Nijni Novgorod in 1869 and 1870.

At the close of the Franco-German war, every country in Europe was attacked except Great Britain, and America succeeded in averting its importation until 1873. By 1874 it had, however, disappeared everywhere on this side of India. In 1881-83 it prevailed in Arabia and Egypt; in 1884 it made its appearance in France, and soon raged throughout Italy and Spain. The influence of pure water supplies was brought into special prominence, not only in the case of single towns in Italy and Spain, but in the almost complete immunity enjoyed by Germany, which had previously suffered heavily in every epidemic. Cholera lingered in the south until the end of 1885, since which date it had been absent from the continent of Europe until the isolated outbreak in Spain in 1890. This, Dr. Willoughby was convinced, was not imported

from the East, but was a recrudescence of the epidemic of 1884-85, brought about by excavations in infected ground. Still cholera had, since 1888, been slowly but steadily advancing by the Persian Gulf and the extensions of that route. It had last year reached the shores of the Caspian and Black Seas, and had raged at Mecca, though Egypt had almost miraculously escaped, and it had persisted at Aleppo and the Syrian ports certainly as late as January of the present year. He had little doubt that, as its march had closely corresponded with that in 1845–47 we might expect history to repeat itself in an invasion of Southern and Eastern Europe during the coming summer, unless, as in 1823 and 1839, it should retire, after having thus approacned the confines of Europe. If, however, it had not already really died out, the vast increase of communication between the two continents rendered such recession less probable than it was fifty years ago. The paper was illustrated by a number of maps showing the great routes and the course of each epidemic in Asia, Europe and America. Sir W. MOORE gave his experience of an outbreak at Aden following the unloading of a cargo which was proved to have been soiled with cholera excreta at Bombay, the crew remaining healthy; and Mr. MURPHY alluded to Dr. Simpson's having traced the occurrence of cholera on board certain ships moored in the Hooghly to an infected milk supply. Surgeon DAWSON argued in favor of epidemic influences, but Dr. WILLOUGHBY, in reply, urged that in the case of the ships at sea quoted by Mr. Lawson, the crews who must have been most exposed to atmospheric influences escaped, the steerage passengers only being attacked; while such negative evidence as that of the Southampton and Theydon Bois outbreaks in 1865 was worth nothing. It was more probable that some one suffering from mild and unrecognized cholera had crossed over from France, and, leaving the infection behind, had perhaps returned, than that Mr. Groombridge had inhaled it with the sea breezes on Weymouth pier. Such difficulties were incident to all cases even of smallpox, the source of which no one doubted. The PRESIDENT complimented Dr. Willoughby on having brought within the compass of a single paper a mass of information hitherto inacessible, and on having by his demonstration of the almost "postal regularity" with which the late epidemic followed the routes of travel by road, rail and steamships, regardless of prevailing winds, but refusing to cross the Scandinavian and Carpathian mountain ranges in mid-winter, given the *coup de grace* to the doctrine of atmospheric waves, which, in the case of this disease, he had until that evening accepted.—*Lancet.*

MEDICAL CHEMSTRY.

HÆMATOPORPHYRIN IN THE URINE.

A number of cases have recently been recorded in which the iron-free derivative of hæmoglobin, called hæmatoporphyrin, has been described in the urine. The first recorded observations of this occurrence were made by MacMunn in June last, and the most recent, by Salkowski, are published in the *Centralb. f. d. med. Wiss.*, 1891, No. 8, p. 129. The three cases mentioned by Salkowski were in women, and one case ended fatally. The cause of the occurrence of this abnormal substance in the urine is supposed by Salkowski to be the administration of sulphonal. This is, however, an abnormal action of the drug, and therefore appear to be due to individual idiosyncrasy.

TESTING FOR IRON IN ORGANS.

Zaleski (Die Vereinfachung von makro- und mikrochem. Eisenreaction, *Zeitsch. f. phys. Chemie*, xiv., p. 274, 1890) gives a simple method for detecting histologically the presence of iron in organs. Small pieces of the organ are hardened first in 65 per cent. alcohol, and then in 60 per cent. alcohol, to which a few drops of yellow ammonium sulphide are added. In twenty-four hours, if iron be present, the tissue has a greenish appearance, and on making a section the exact distribution of the particles of iron sulphide is readily detected by the color reaction.

NEWS AND MISCELLANY.

EXPERIMENTS recently made in France with a view to discovering the amount of vitality in specimens of trichinæ show that, though they be subjected to a temperature of 25° below zero for two hours, they again become as lively as ever on a return of a normal amount of light and heat.

THE University of Bonn is stated by the correspondents of the London papers to have ordered that the use of the Koch injection shall be discontinued in all the clinical hospitals under its jurisdiction.